

# IEI

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# EPITOME

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## Announcements

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★ Certified Professional Engineers (PE) & International Professional Engineers (IntPE)

★ Project Management Associates Weekend Programme

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# Notification for R&D Grant-in-Aid

To promote appropriate technology, assist in building up design & research talents and, most importantly, to help in nurturing potential R&D venture amongst engineering students pursuing Diploma/UG/PG/PhD courses, The Institution of Engineers (India) had instituted the R&D Grant-in-Aid program way back in 2001.

Every year, the Institution invites applications for funding industry-oriented R&D projects and research initiatives aimed at improving the life-style of common people from engineering students pursuing full time Diploma/UG/PG/PhD engineering program in AICTE/UGC/NAAC approved Institutions / Colleges / Universities. The application form and guidelines are available in our website <https://www.ieindia.org>. The projects should be carried out under the guidance of faculty members who are Corporate Members of IEI. Membership criteria for student(s), guide(s) and Institution(s) are as follows:

Project Category	Student/Applicant Membership	Guide(s) Membership	Institutional Membership
1. Diploma	Exempted [Membership of Student Chapter is desirable]	AMIE/MIE/FIE	Not Mandatory
2. UG (BE/BTech/ Equivalent)	'Student Member' (SMIE)	AMIE/MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA /NAAC Accreditation or valid NIRF Rank
3. PG (ME/MTech/ Equivalent)	AMIE/MIE/FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA /NAAC Accreditation or valid NIRF Rank
4. PhD	AMIE/MIE/FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA /NAAC Accreditation or valid NIRF Rank

The soft copy of the duly filled-up applications (in editable format), as per the pro-forma available in our website [www.ieindia.org](https://www.ieindia.org), should be sent through email to [research@ieindia.org](mailto:research@ieindia.org) and one printed copy of the same should reach the following address:

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The Institution of Engineers (India)  
8 Gokhale Road, Kolkata 700 020

Kindly go through the guidelines (visit link <https://www.ieindia.org/webui/IEI-Activities.aspx#RnD-Initiative>) before filling up the application.

# Publication by Members

## Papers published in the Journals / Proceedings



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**Title of Paper: Synthesis of Multi-position 3-PRS Manipulator based on Spherical Constraints by Eliminating the Parasitic Motion**

Journal of The Institution of Engineers (India): Series C, 103, 2022, pp 1447–1454, Print ISSN 2250 – 0545, Electronic ISSN 2250-0553

DOI: [10.1007/s40032-022-00887-9](https://doi.org/10.1007/s40032-022-00887-9)

**Abstract:** This paper presents synthesizing procedure for eliminating the parasitic motions of a three-prismatic-revolute-spherical manipulator. The parasitic motions can occur due to constrained mobility of the manipulator. The three constrained variables of manipulators are rotational freedom along z-axis and two degrees of translational freedom about x- and y-axis of the fixed frame. The parasitic motions are usually nonzero and are determined by the geometrical parameters of the manipulator. These parasitic motions cause crucial problems in some cases. In general, the amplitude of parasitic motions is very small but shows more impact on precision of motion, quality and accuracy of the mirror images of 3-PRS manipulator. To prevent these undesirable parasitic motions, the synthesized architectural parameters of 3-PRS manipulator are identified by eliminating the parasitic motions. The prospective application of this manipulator is in mirror image telescopic process. The synthesis of this manipulator involves the determination of the dimensions of the manipulator such that a point on the mobile platform passes through a prescribed set of positions in space. In this paper, the physical restrictions on range of motion of spherical joints are considered by introducing the limits on rotational motion of cone angle of spherical joints to determine the dimensions of the fixed frame of a three-prismatic-revolute-spherical manipulator. This research aim is to eliminate all parasitic motions, and the procedure committed for multi-positions of a three-prismatic-revolute-spherical manipulator. The synthesis of the manipulator is carried out by approximate-method using least-square technique.

**Keywords:** Spherical-constraint, Parasitic Motion, 3-PRS, Multi-position, Least-square Technique



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**Title of Paper: Practices and Challenges for Municipal Solid Waste Management in Balasore District, Odisha**

Chinese Journal of Geotechnical Engineering, 44(11), pp 1-9, 2022, ISSN:1000-4548

URL: <http://ytgcxb.periodicales.com/index.php/CJGE/article/view/206>

**Co-authors:** Syam Kumar Pasupuleti and R Eswari



# Publication by Members

**Abstract:** Sanitation is important for physical, social, and mental health. Specifically, safe sanitation is associated with positive impacts on diarrheal disease, parasitic infections, stunting, cognitive development, and mental and social well-being. A practical approach to deal with the municipal solid waste at hand needs the adoption of a suitable model and an understanding of the required processes to manage it effectively. The study focused on the processes in Municipal Solid Waste (MSW) value chain like waste generation, primary source storage, collection, secondary storage, transportation, processing and disposal. Decentralization of waste disposal and cluster approach of cities and towns nearby to curb the waste danger and facilitate the waste to go the fuel way looked sustainable and achievable. Sustainability studies should help all stakeholders to participate harmoniously with a common goal of clean city and striving for a better planet. The study ascertained that Balasore should have source segregation with door to door collection facility and may need decentralized composting facility centres to handle the biodegradable wastes. The plastic wastes can be used for Waste to Fuel or for road making.

**Keywords:** Plastic Waste, Management, Recycle, Reuse, Techniques, Microfiber



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**Title of Paper:** QZSS Regional Navigation System Visibility and Solution Experience from India

National Academy Science Letters, 2022, Electronic ISSN: 2250-1754, Print ISSN 0250-541X

**DOI:** <https://doi.org/10.1007/s40009-022-01150-6>

**Co-authors:** Debipriya Dutta, Mrinal Goswami, Surajit Kundu & Anindya Bose

**Abstract:** In a multi-GNSS environment, users are exploiting the benefits of hybrid multi-constellation GNSS operation for redundancy and enhanced solution quality. The Indian geolocation helps in signal availability from all global and regional systems, but no study on the usability and advantages of the Japanese Quasi-Zenith Satellite System (QZSS) is made from India. This work presents the first results on the availability and advantages of QZSS from India based on simulations and real-time data. It is observed that 2–4 QZSS satellites can always be used from India. In static Single Point Positioning (SPS), QZSS in hybrid operation provides better solution quality over any single global constellation operation and GPS + Galileo + QZSS provides around 1 m 2-dimensional solution precision. The results would be useful for Indian GNSS user community.

**Keywords:** GNSS, QZSS, Solution Quality, Multi-GNSS



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# Publication by Members

## Title of Paper: **A Lightweight Pairing-free Ciphertext-policy Attribute-based Signcryption for Cloud-assisted IoT**

Peer-to-Peer Networking and Applications, 15(5), 2022, pp 2390-2403, Electronic ISSN 1936-6450, Print ISSN 1936-6442

DOI: <https://doi.org/10.1007/s12083-022-01356-x>

Co-authors: Biswajit Patra & Chittaranjan Sahoo

**Abstract:** Cloud-Assisted Internet of Things (IoT) has become an increasingly widespread technological trend that can significantly improve the performance of IoT applications by outsourcing massive data from IoT devices to the cloud due to their limited storage and computation capabilities. Since the cloud is not fully trusted, the outsourced data has security issues, such as confidentiality, authenticity, and access control. Attribute-based Signcryption (ABSC) is a promising cryptographic solution to address the above problems. However, the existing ABSC schemes create heavy computation overhead and are unsuitable for some resource-constrained IoT devices. This paper proposes a lightweight pairing-free ciphertext-policy ABSC for Cloud-Assisted IoT (PF-CP-ABSC). This scheme uses elliptic curve cryptography (ECC) to reduce computation overhead instead of bilinear-pairings. Further, we adopt CP-ABSC to provide confidentiality, authenticity, and fine-grained access control. In the security analysis, we prove the security of the PF-CP-ABSC scheme under the hardness of Elliptic Curve Decisional Diffie-Hellman (ECDDH) and Elliptic-curve Discrete Logarithm problem (ECDLP). The theoretical analysis and experimental results show that this scheme is lightweight and is suitable for resource-constrained IoT applications.

**Keywords:** Cloud Server, Internet of Things, CP-ABSC, Pairing-Free, Elliptic Curve Cryptography, Confidentiality, Authentication, Collusion Resistant



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## Title of Paper: **Experimental Analysis of Evacuated Tube Solar Air Heater (ETSAH) with Inbuilt Sensible Thermal Energy Storage**

Heat Transfer (Wiley), 51(8), 31-October-2022

DOI: <https://doi.org/10.1002/htj.22760>

Co-authors: Amit Kumar & AD Parekh

**Abstract:** In the present work, an evacuated tube solar air heater (ETSAH) with inbuilt sensible heat storage material (SHSM) is experimentally evaluated. The system comprises two sets each having 50 evacuated tubes with an Htype arrangement and a total collector area of 16.92 m<sup>2</sup>. For the purpose of hot air generation, ETSAH is simultaneously connected in series and in parallel with and without the use of reflectors. Three different mass flow rates of 122.90, 164.87, and 212.83 kg/h were fixed to get 12 diverse cases of ETSAH operation. The highest hot air temperature reported by the system is 121.7°C when it was connected in series with conventional reflectors at 212.83 kg/h of flow rate and 469 W/m<sup>2</sup> average solar intensity. The system reported an overall average energy efficiency of 49.76% and an exergy efficiency of 17.97% with the highest average hot air temperature difference of 56.12°C from 09:00 to 20:00 h. Without the incorporation of any additional SHSM, the average hot air temperature delivered by ETSAH (when under the neighbor building shadow) is 49.73°C logged from 17:00 to 20:00 h. The economic analysis is also carried out to ensure its practical application and feasibility. For the best system performance, the annual cost of hot air generation is 0.0194 Rs./kg (0.0002433 \$/kg).

**Keywords:** Air Flow Rates, Evacuated Tube Collector, Sensible Heat Storage, Solar Air Heater

# Publication by Members



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**Title of Paper: Monitoring and Regulating Climatic Condition of Polyhouse for Successful Off-season Grafting of Citrus Fruits using Internet of Things Platform**

International Journal of Agriculture, Environment and Biotechnology (IJAEB), 15(2), Special Issue, 2022, pp 417-422, Online ISSN: 2230-732X, Print ISSN: 0974-1712

**URL:** <https://aiasa.org.in/wp-content/uploads/2022/09/IJAEB-Sp-Issue-AAFS-2022-1-1.pdf>

**Co-authors:** Mamta Bhattarai, Umesh Acharya and Pablo Otero

**Abstract:** Citrus fruit (mandarin, sweet orange and acid lime) is one of the most cultivated and consumed fruits in Nepal. The demand for citrus plants is increasing every year. However, due to the prevailing climatic conditions the citrus plants are mostly grafted once a year during November to January in Nepal. The average ambient temperature during this period is around 5-22° C. Previous research has shown that the Grafting success rate during this window has been found to be above 90% when using small plastic tunnels. This grafting period has been a bottleneck to meet the demand of the citrus plants. The other problem is; these young plants are sent for transplantation in June-July of the same year which are merely 5-6 months young. This could increase the chances of mortality rate during transplantation. To address the problem of demand and supply as well as to extend the grafting window period an investigation with robust climate monitoring and climate regulating system is proposed for internal climate management inside a poly house of National Citrus Research Program, Dhankuta, Nepal to carry out the experiment on off season grafting of citrus fruit. An internet of things (IoT) based design and automation is implemented in a polyhouse for off season grafting, which has not been practiced so far in Nepal. The sensors and actuators are equipped and placed appropriately inside the polyhouse. The IoT platform is designed and deployed to acquire the sensor data in real-time that helps to visualize, monitor and regulate the internal climate inside the polyhouse. This system not only limits the potential to graft citrus plants but also can be extended to other fruits like avocado, walnut, apple, pear, and peach, which grafting success rate is low at present when carried out in an open field conditions.

**Keywords:** Citrus Grafting, Climate Monitoring and Regulation, Sensor Automation, Real Time Data Acquisition, Internet of Things



## IEI-Springer Journal



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# Published Articles in IEI Journals



## Journal of The Institution of Engineers (India): Series A

Civil, Architectural, Environmental and Agricultural Engineering

(Electronic ISSN: 2250-2157; Print ISSN: 2250-2149)

[SCOPUS Indexed & UGC-CARE (India) listed]

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### Volume 103, Issue 4, December 2022

Title: **A Macro Modelling Based FEA Methodology for Realization of Textile Reinforced Concrete Rectangular and Cylindrical Shaped Tanks**

Authors: **Smitha Gopinath, S Shankar & A K Farvaze Ahmed**

CSIR-Structural Engineering Research Centre, Chennai, 600113, India

**Kira Heins, Gözdem Dittel & Thomas Gries**

Institut Fuer Textiltechnik der RWTH Aachen University, 52074, Aachen, Germany

DOI: <https://doi.org/10.1007/s40030-022-00645-1>

Publication Date: 20 August 2022

Pages: 961–973

Title: **An Improved Deep Convolutional Neural Network for Image-Based Apple Plant Leaf Disease Detection and Identification**

Authors: **Dharmendra Kumar Mahato**

Department of Electronic Science, Babasaheb Bhimrao Ambedkar Bihar University, Bihar, India

**Amit Pundir & Geetika Jain Saxena**

Department of Electronics, Maharaja Agrasen College, University of Delhi, Delhi, India

DOI: <https://doi.org/10.1007/s40030-022-00668-8>

Publication Date: 16 August 2022

Pages: 975–987

Title: **Application of Ensemble Machine Learning for Construction Safety Risk Assessment**

Authors: **M Riyo George & K B Anand**

Department of Civil Engineering, Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Coimbatore, India

**Madhusudana Rao Nalluri**

Department of Computer Science and Engineering, Amrita School of Computing, Amrita Vishwa Vidyapeetham, Amaravati, India

DOI: <https://doi.org/10.1007/s40030-022-00690-w>

Publication Date: 06 October 2022

Pages: 989–1003

Title: **Application of Sentinel-1A Synthetic Aperture Radar Datasets for the Estimation of Stream Flow in Various Sections of the Sone River**

Authors: **Harsh Kumar & Thendiyath Roshni**

Department of Civil Engineering, National Institute of Technology, Patna, 800005, India

DOI: <https://doi.org/10.1007/s40030-022-00669-7>

Publication Date: 22 August 2022

Pages: 1005–1014

# Published Articles in IEI Journals

Title: **Artificial Neural Network Based Prediction for FRP-Confined Concrete Under Cyclic Loading**

Authors : **Smitha Gopinath & Ramesh Gopal**

CSIR-Structural Engineering Research Centre, Taramani, Chennai, 600113, India

DOI: <https://doi.org/10.1007/s40030-022-00678-6>

Publication Date: 05 September 2022

Pages: 1015–1028

Title: **Comparison of Analytic Hierarchy Process (AHP) and Fuzzy Analytic Hierarchy Process (f-AHP) for the Sustainability Assessment of a Water Supply Project**

Author : **Narayanan Natarajan, Senthil Kumar Dineshkumar & Ramalingam Anuja**

Department of Civil Engineering, Dr. Mahalingam College of Engineering and Technology, Pollachi, 642003, Tamil Nadu, India

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DOI: <https://doi.org/10.1007/s40030-022-00665-x>

Publication Date: 25 July 2022

Pages: 1029–1039

Title: **Delay Models for Various Lane Assignments at Signalised Intersections in Heterogeneous Traffic Conditions**

Authors : **Barhmaiah Borigarla & S Moses Santhakumar**

Department of Civil Engineering, National Institute of Technology Tiruchirappalli, Tiruchirappalli, Tamil Nadu, India

DOI: <https://doi.org/10.1007/s40030-022-00673-x>

Publication Date: 29 August 2022

Pages: 1041–1052

Title: **Development and Validation of a Delay Assessment Matrix for Road and Highway Projects**

Authors : **Harish L Reddy**

National Institute of Construction Management and Research, Pune, India

**MS Nagakumar**

R V College of Engineering, Bengaluru, India

DOI: <https://doi.org/10.1007/s40030-022-00651-3>

Publication Date: 20 July 2022

Pages: 1053–1061

Title: **Dynamic Analysis of Stiffened and Unstiffened Lock Gate Considering Fluid–Structure Interaction**

Authors : **Arindam Das & Chaitali Ray**

Department of Civil Engineering, Indian Institute of Engineering Science and Technology, Shibpur, Howrah, 711103, India

DOI: <https://doi.org/10.1007/s40030-022-00674-w>

Publication Date: 31 August 2022

Pages: 1063–1072

Title: **Estimation of Corrosion-Free Reinforcement as Replacement to Steel Rebars for Concrete Walls**

Authors : **Ahmed Elansary & Mohamed Zawam**

Department of Structural Engineering, Faculty of Engineering, Cairo University, Giza, 12613, Egypt

**Ahmed Farag & Mostafa Abdeen**

Department of Mathematics and Physics, Faculty of Engineering, Cairo University, Giza, 12613, Egypt



# Published Articles in IEI Journals

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DOI: <https://doi.org/10.1007/s40030-022-00663-z>

Publication Date: 10 August 2022

Pages: 1073–1087

Title: **Experimental Investigations on Axial–Flexural Behaviour of Slender Concrete Filled Steel Tubular Columns**

Authors : **Vardhan Garg, Arth J Patel & Sharadkumar Purohit**

Department of Civil Engineering, School of Engineering, Institute of Technology, Nirma University, Ahmedabad, Gujarat, 382481, India

DOI: <https://doi.org/10.1007/s40030-022-00670-0>

Publication Date: 07 August 2022

Pages: 1089–1100

Title: **Health Risk of Potentially Toxic Elements from Diverse Sources in Urban Road Dust: An Application of Receptor Modeling**

Authors : **Jithin Jose & B Srimuruganandam**

School of Civil Engineering, Vellore Institute of Technology, Vellore, Tamil Nadu, 632 014, India

DOI: <https://doi.org/10.1007/s40030-022-00667-9>

Publication Date: 10 August 2022

Pages: 1101–1107

Title: **Hydrogeochemical Characterization and Qualitative Assessment of Groundwater in Jampali Coal Mining Area, Chhattisgarh, India**

Authors : **Shah Izhar Ahmed, Ashwani Kumar Sonkar, Nawal Kishore & Ramita Varshney**

Department of Mining Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi, 221005, Uttar Pradesh, India

**Dalchand Jhariya**

Department of Applied Geology, National Institute of Technology, Raipur, 492010, Chhattisgarh, India

DOI: <https://doi.org/10.1007/s40030-022-00686-6>

Publication Date: 06 October 2022

Pages: 1109–1125

Title: **Hygrothermal Properties of Stabilized Earthen Masonry Blocks**

Authors : **M G Sreekumar & Deepa G Nair**

School of Engineering, Cochin University of Science and Technology, Cochin, 682 022, India

DOI: <https://doi.org/10.1007/s40030-022-00693-7>

Publication Date: 08 October 2022

Pages: 1127–1134

Title: **Influence of Horizontal Curve Geometry on Operating Speeds on Four-Lane Divided Highways Under Heterogeneous Traffic Conditions**

Authors : **Kiran Kumar Tottadi, Chaitanya Varma & Arpan Mehar**

Department of Civil Engineering, National Institute of Technology, Warangal, 506004, India

DOI: <https://doi.org/10.1007/s40030-022-00677-7>

Publication Date: 27 September 2022

Pages: 1135–1145

# Published Articles in IEI Journals

- Title:** **Laboratory Investigations to Optimize the Physicochemical Parameters for Bacillus cereus Inclusions in Concrete for Enhanced Compressive Strength and Chloride Resistance**
- Authors :** **Sk Rahaman, Jayati Ray Dutta & Arkamitra Kar**  
Birla Institute of Technology and Science (BITS)-Pilani, Hyderabad Campus, Hyderabad, Telangana, 500078, India  
**Mohna Bandyopadhyay**  
Department of Dermatology, University of Pittsburgh, Pittsburgh, PA, 15260, USA
- DOI:** <https://doi.org/10.1007/s40030-022-00685-7>
- Publication Date:** 06 October 2022
- Pages:** 1147–1164
- Title:** **Modeling the Impact of Climate Change on the Flow Regimes of River Sindh of Kashmir Valley**
- Authors :** **Mehlath Shah & MA Lone**  
Department of Civil Engineering, National Institute of Technology, Srinagar, J&K, 190006, India
- DOI:** <https://doi.org/10.1007/s40030-022-00672-y>
- Publication Date:** 09 August 2022
- Pages:** 1165–1181
- Title:** **Performance of Structural Geopolymer Concrete Utilising Ferrochrome Ash and Fly Ash as Source Material**
- Authors :** **Tribikram Mohanty, Ankit Kumar, Prasanna Kumar Acharya & Purnachandra Saha**  
School of Civil Engineering, Kalinga Institute of Industrial Technology, Bhubaneswar, India  
**Sanjaya Kumar Patro**  
Department of Civil Engineering, Veer Surendra Sai University of Technology, Burla, India
- DOI:** <https://doi.org/10.1007/s40030-022-00681-x>
- Publication Date:** 05 September 2022
- Pages:** 1183–1194
- Title:** **Prediction of Probability of Liquefaction Using Soft Computing Techniques**
- Authors :** **Divesh Ranjan Kumar, Pijush Samui & Avijit Burman**  
National Institute of Technology Patna, Patna, India
- DOI:** <https://doi.org/10.1007/s40030-022-00683-9>
- Publication Date:** 07 September 2022
- Pages:** 1195–1208
- Title:** **Prediction of Uniaxial Compressive Strength of Rock Using Machine Learning**
- Authors :** **Sharad Dadhich & Jitendra Kumar Sharma**  
Department of Civil Engineering, Rajasthan Technical University, Kota, India  
**Madhav Madhira**  
JNT University, Hyderabad, India
- DOI:** <https://doi.org/10.1007/s40030-022-00688-4>
- Publication Date:** 09 October 2022
- Pages:** 1209–1224
- Title:** **Prioritisation of Barriers in the Implementation of Electric Mobility in Indian Context Using Fuzzy Analytical Hierarchical Process**
- Authors :** **Ruchi Singhal**  
Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, 395007, India  
**Chetan R Patel**  
Civil Engineering Division, Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat, 395007, India
- DOI:** <https://doi.org/10.1007/s40030-022-00676-8>

# Published Articles in IEI Journals

Publication Date: 06 October 2022

Pages: 1225–1236

Title: **Reliability Analysis of a Complex Pier Against Local Scour**

Authors: **Mohd Muzzammil, Javed Alam, Krishna Kumar & Mohd Khalid**

Department of Civil Engineering, Aligarh Muslim University (AMU), Aligarh, India

DOI: <https://doi.org/10.1007/s40030-022-00699-1>

Publication Date: 25 October 2022

Pages: 1237–1245

Title: **Response Control of Adjoining Similar Structures Interconnected with Friction Dampers**

Author: **C C Patel**

Department of Civil Engineering, Marwadi Education Foundation Group of Institutions, Rajkot, India

DOI: <https://doi.org/10.1007/s40030-022-00662-0>

Publication Date: 08 August 2022

Pages: 1247–1257

Title: **Study on Combined Effects of Fly Ash, GGBS and Advanced Nanomaterials on the Properties of SCC**

Authors: **B Narendra Kumar & G Vinod Kumar**

Department of Civil Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad, India

DOI: <https://doi.org/10.1007/s40030-022-00657-x>

Publication Date: 08 August 2022

Pages: 1259–1270

Title: **Wind-Induced Interference Effects on Low-Rise Pitched Roof Structure Based on CFD Simulations**

Authors: **Amartya Sinha, Aditya Kumar Jha & Ritu Raj**

Department of Civil Engineering, Delhi Technological University, Delhi, India

DOI: <https://doi.org/10.1007/s40030-022-00675-9>

Publication Date: 16 August 2022

Pages: 1271–1285

Title: **A Descriptive Study of Vehicle Classwise Headways using Mixed Traffic Data**

Authors: **Pritam Saha & Rupali Roy**

Civil Engineering Department, Indian Institute of Engineering Science and Technology, Shibpur, Howrah, West Bengal, 711103, India

DOI: <https://doi.org/10.1007/s40030-022-00666-w>

Publication Date: 25 July 2022

Pages: 1287–1298

Title: **A Review on India's Solar Energy Prospective: Potential, Environmental Protection and Policies Framework**

Authors: **Umesh Agarwal & Naveen Jain**

Department of Electrical Engineering, College of Technology and Engineering, Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan, India

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DOI: <https://doi.org/10.1007/s40030-022-00664-y>



# Published Articles in IEI Journals

Publication Date: 10 August 2022

Pages: 1299–1313

Title: **Estimation of Willingness to Pay and Value of Statistical Life for Road Crash Fatality Reduction for Motorcyclists: A Case Study of Patna, India**

Authors : **Sweta Bharti, Ranja Bandyopadhyaya & Nandan Kumar Raju**

Department of Civil Engineering, National Institute of Technology, Patna, 800005, India

DOI: <https://doi.org/10.1007/s40030-022-00680-y>

Publication Date: 19 September 2022

Pages: 1315–1323

Title: **Evaluation and ANN Modelling of Traffic Noise on BRTS Corridors with Different Median Vegetation: A Case Study of Surat City (Western India)**

Authors : **K Someya, B N Tandel & Ramesh B Ranpise**

Civil Engineering Department, S V National Institute of Technology, Surat, India

DOI: <https://doi.org/10.1007/s40030-022-00689-3>

Publication Date: 28 September 2022

Pages: 1325–1339

Title: **Soil Erosion Planning for Reservoir Watershed Using Sediment Yield Index Method: A Case Study of Ujjani Reservoir**

Authors : **Santosh Wagh**

National Institute of Technology, Surat, India

**Vivek Manekar**

Civil Engineering Department, National Institute of Technology, Surat, India

DOI: <https://doi.org/10.1007/s40030-022-00679-5>

Publication Date: 07 September 2022

Pages: 1341–1354

# Published Articles in IEI Journals



## Journal of The Institution of Engineers (India): Series B

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### Volume 103, Issue 6, December 2022

Title: **A Novel Memristor-Based SRAM Design with Improved Stability in Sub-Threshold Region**

Authors: **Himanshu Gupta & Sandeep Bansal**

School of Electronics and Electrical Engineering, Lovely Professional University, Phagwara, 144411, India

DOI: <https://doi.org/10.1007/s40031-022-00774-y>

Publication Date: 16 August 2022

Pages: 1863–1873

Title: **A Novel Method of CT Chest Image Segmentation and Analysis for Early Lung Cancer Detection**

Authors: **Vinod B Kumbhar, Saurabh R Prasad & Suyog B Rayjadhav**

D K T E Society's Textile & Engineering Institute, Ichalkaranji, India

**Mahesh S Chavan**

Kolhapur Institute of Technology's College of Engineering, Kolhapur, India

DOI: <https://doi.org/10.1007/s40031-022-00808-5>

Publication Date: 10 October 2022

Pages: 1875–1883

Title: **Assessment of Optimal Size and Location of DG/CB in Distribution Systems using Coulomb–Franklin's Algorithm**

Authors: **Vimal Tiwari & Manjaree Pandit**

Department of Electrical Engineering, Madhav Institute of Technology and Science, Gwalior, India

**Hari Mohan Dubey**

Department of Electrical Engineering, Birsa Institute of Technology, Sindri, Dhanbad, India

DOI: <https://doi.org/10.1007/s40031-022-00811-w>

Publication Date: 28 October 2022

Pages: 1885–1908

Title: **Deep Retinal Image Analysis and Classification Using Deer Hunting Optimization-Based Tandem Pulse Coupled Neural Network**

Authors: **V Desika Vinayaki**

Department of Computer Science and Engineering, Noorul Islam Centre for Higher Education, Kumaracoil, India

**R Kalaiselvi**

Department of Computer Science and Engineering, RMK College of Engineering and Technology, Pudukottai, India

# Published Articles in IEI Journals

DOI: <https://doi.org/10.1007/s40031-022-00785-9>

Publication Date: 30 August 2022

Pages: 1909–1916

Title: **DFIG-Based Wind Plant Coupled Series Compensated Transmission Line: Modeling and SSR Stability Analysis**

Authors : **Neevatika Verma & Narendra Kumar**

Department of Electrical Engineering, Delhi Technological University, New Delhi, 110042, India

DOI: <https://doi.org/10.1007/s40031-022-00807-6>

Publication Date: 28 October 2022

Pages: 1917–1926

Title: **Estimation of Chaos and Coherence in Frontoparietal, Occipital and Temporal Lobes at Pre, Post and During Focal Cerebral Ischemia**

Author : **Saurav Bharadwaj**

Department of Biomedical Engineering, Indian Institute of Technology Hyderabad, Hyderabad, India

DOI: <https://doi.org/10.1007/s40031-022-00793-9>

Publication Date: 29 August 2022

Pages: 1927–1938

Title: **Fuzzy Inference Model for Short-Term Load Forecasting**

Authors : **Saroj Kumar Panda & Papia Ray**

Department of Electrical Engineering, Veer Surendra Sai University of Technology (VSSUT), Burla, Sambalpur, Odisha, India

DOI: <https://doi.org/10.1007/s40031-022-00809-4>

Publication Date: 11 October 2022

Pages: 1939–1948

Title: **Hybrid Oriented FAST Rotated BRIEF and Non-Rotational-Invariant Uniform Local Binary Patterns for CBMIR**

Authors : **Faiyaz Ahmad & Tanvir Ahmad**

Department of Computer Engineering, Jamia Millia Islamia, New Delhi, India

DOI: <https://doi.org/10.1007/s40031-022-00787-7>

Publication Date: 15 September 2022

Pages: 1949–1959

Title: **Implementation of EPLL-Based Control Algorithms using Low-Cost Target Platforms for Synchronization in Electrified Transportation Systems**

Authors : **Sushil Karvekar**

Department of Electrical Engineering, Walchand College of Engineering, Sangli, Sangli, India

**Prasad Joshi**

Department of Electrical Engineering, Government College of Engineering Karad, Karad, India

DOI: <https://doi.org/10.1007/s40031-022-00791-x>

Publication Date: 29 August 2022

Pages: 1961–1973



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- Title:** **Inferring Material Parameters of a Single Mode Piezo Element from a Derived Electrical Series Model**  
**Authors :** **Paramita Banerjee**  
 Guru Nanak Institute of Technology Sodepur, Panihati, Kolkata, West Bengal, India  
**Ratna Ghosh & Bhaswati Goswami**  
 Jadavpur University Jadavpur, Kolkata, West Bengal, India  
**DOI:** <https://doi.org/10.1007/s40031-022-00744-4>  
**Publication Date:** 17 September 2022  
**Pages:** 1975–1985
- Title:** **Mapping Forests Using an Imbalanced Dataset**  
**Authors :** **Keerti Kulkarni & PA Vijaya**  
 Department of Electronics & Communication Engineering, BNM Institute of Technology, Bangalore, India  
**DOI:** <https://doi.org/10.1007/s40031-022-00790-y>  
**Publication Date:** 29 August 2022  
**Pages:** 1987–1994
- Title:** **M-AHP and GRA Based a Hybrid Double-Layered Technique for Selecting the Optimal and Best Relay in Cooperative CR Networks**  
**Authors :** **Jyoti Sekhar Banerjee & Arpita Chakraborty**  
 Department of Electronics & Communication Engineering, Bengal Institute of Technology, Kolkata, 700150, India  
**Abir Chattopadhyay**  
 Department of Electronics & Communication Engineering, University of Engineering & Management, Kolkata, 700156, India  
**DOI:** <https://doi.org/10.1007/s40031-022-00786-8>  
**Publication Date:** 31 August 2022  
**Pages:** 1995–2011
- Title:** **Modified Low Power SRAM Compiler with Reduced Access Time**  
**Authors :** **B K Vinay**  
 Department of Electronics and Communication Engineering, Vidyavardhaka College of Engineering, Mysuru, 570002, India  
 Department of Electronics and Communication, Dayananda Sagar University, Bengaluru, Karnataka, India  
**S Pushpa Mala**  
 Dayananda Sagar University, Bengaluru, India  
**DOI:** <https://doi.org/10.1007/s40031-022-00816-5>  
**Publication Date:** 10 October 2022  
**Pages:** 2013–2023
- Title:** **MQ-KPCA: Custom Kernel PCA for Classification of Microscopic Images**  
**Authors :** **M Suresha, D S Raghukumar & S Kuppa**  
 Department of Computer Science, Kuvempu University, Shivamogga, Karnataka, 577 451, India  
**R S Raghavendra**  
 Department of Mathematics, Kuvempu University, Shivamogga, Karnataka, 577 451, India  
**DOI:** <https://doi.org/10.1007/s40031-022-00818-3>  
**Publication Date:** 17 October 2022  
**Pages:** 2025–2033

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- Title:** **Neuro-Wavelet Protection Scheme for PV-Wind Energy Source Integrated 6-Terminal Power Network with IoT-Based Smart Environment**
- Authors :** **Ravi Kumar Goli**  
Electrical & Electronics Engineering Department, Bapatla Engineering College, Bapatla, Andhra Pradesh, India
- Y Manju Sree**  
Electrical & Electronics Engineering Department, Kakatiya Institute of Technology and Sciences, Warangal, India
- G Vamsi Priya**  
JNTU College of Engineering, Vizianagaram, Andhra Pradesh, India
- DOI:** <https://doi.org/10.1007/s40031-022-00810-x>
- Publication Date:** 21 October 2022
- Pages:** 2035–2048
- Title:** **Novel Patterns for Formal Verification of System Safety Properties**
- Authors :** **Ranjana Nallamalli**  
Defence Research and Development Organisation, New Delhi, India
- Durg Singh Chauhan**  
GLA University, Mathura, India
- DOI:** <https://doi.org/10.1007/s40031-022-00788-6>
- Publication Date:** 19 August 2022
- Pages:** 2049–2056
- Title:** **Optimal Allocation of FACTS Devices Using Kinetic Gas Molecular Optimization and Cuckoo Search Algorithm**
- Authors :** **Kishan Jivandas Bhayani & Dharmesh J Pandya**  
Department of Electrical Engineering, Atmiya University, Kalawad Road, Rajkot, Gujarat, 360005, India
- DOI:** <https://doi.org/10.1007/s40031-022-00784-w>
- Publication Date:** 17 August 2022
- Pages:** 2057–2072
- Title:** **Path Planning of Mobile Robot Based on Improved Ant Colony Optimization**
- Authors :** **Yuyang Zhou & Dongshu Wang**  
School of Electrical and Information Engineering, Zhengzhou University, Zhengzhou, Henan, China
- DOI:** <https://doi.org/10.1007/s40031-022-00777-9>
- Publication Date:** 17 August 2022
- Pages:** 2073–2083
- Title:** **Performance Evaluation of FSO System under Atmospheric Turbulence and Noise**
- Authors :** **B Sridhar, S Sridhar & V Nanchariah**  
Department of Electronics and Communication Engineering, Lendi Institute of Engineering and Technology, Vizianagaram, India
- DOI:** <https://doi.org/10.1007/s40031-022-00789-5>
- Publication Date:** 30 August 2022
- Pages:** 2085–2095

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Title: **Predictive Control-Based DSTATCOM with a Multi-Criterion Decision-Making Method**

Authors: **Jayadeep Srikakolapu, Sabha Raj Arya & Rakesh Maurya**

Department of Electrical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, 395007, India

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Department of Electrical Engineering, Shri Govindram Seksaria Institute of Technology and Science, Indore, 452003, India

DOI: <https://doi.org/10.1007/s40031-022-00800-z>

Publication Date: 06 October 2022

Pages: 2097–2110

Title: **Research on Community Grid Management Mode Based on System Database Processing**

Authors: **Dongli Peng**

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**Zhengyang Fang**

Technological University of the Philippines, 0900, Manila, Philippines

DOI: <https://doi.org/10.1007/s40031-022-00781-z>

Publication Date: 16 August 2022

Pages: 2111–2118

Title: **Robust and Low-Cost Cascaded-PI Control of Electric Spring Using Filtering Capacitor Current as Minor Current Loop Feedback**

Authors: **Mehul Dansinh Solanki**

Electrical Engineering Department, Shantilal Shah Engineering College, Bhavnagar, India

**S K Joshi**

Electrical Engineering Department, The Maharaja Sayajirao University of Baroda, Vadodara, India

DOI: <https://doi.org/10.1007/s40031-022-00792-w>

Publication Date: 05 September 2022

Pages: 2119–2133

Title: **Structural Seismic Vibration Analysis Using Multistep Wavelet Decomposition**

Authors: **Aniruddha Das**

Department of Civil Engineering, Indian Institute of Technology, Roorkee, India

**Surajit Chattopadhyay**

Department of Electrical Engineering, Ghani Khan Choudhury Institute of Engineering & Technology, Malda, West Bengal, India

DOI: <https://doi.org/10.1007/s40031-022-00794-8>

Publication Date: 19 September 2022

Pages: 2135–2143



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Authors : **Geeta Pathak**

Department of Electrical Engineering, College of Technology, GBPUAT, Pantnagar, U S Nagar, Uttarakhand, 263145, India

**Bhim Singh & B K Panigrahi**

Department of Electrical Engineering, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, 110016, India

DOI: <https://doi.org/10.1007/s40031-022-00803-w>

Publication Date: 25 October 2022

Pages: 2145–2156

Title: **The Algorithm for Blind Multi-User Detector Based on Affine Projection Approach**

Author : **W Shan**

Department of Industry Design, Xinxiang University, Xinxiang, 453000, China

DOI: <https://doi.org/10.1007/s40031-022-00797-5>

Publication Date: 05 September 2022

Pages: 2157–2163

Title: **Three-Terminal Transmission Line Protection By Considering Effect of Infeed Current**

Author : **Jigneshkumar Pramodbhai Desai**

Department of Electrical Engineering, U. V. Patel College of Engineering, Ganpat University, Mehsana, 384012, India

DOI: <https://doi.org/10.1007/s40031-022-00795-7>

Publication Date: 05 September 2022

Pages: 2165–2175

Title: **Water Quality Prediction System Based on Adam Optimised LSTM Neural Network for Aquaculture: A Case Study in Kerala, India**

Authors : **K P Rasheed Abdul Haq & V P Harigovindan**

Department of Electronics and Communication Engineering, National Institute of Technology Puducherry, Thiruvettakudy, Karaikal, Puducherry, 609609, India

DOI: <https://doi.org/10.1007/s40031-022-00806-7>

Publication Date: 10 October 2022

Pages: 2177–2188

Title: **A Review and Analysis on Elastic Optical Networks (EONs): Concepts, Recent Developments and Research Challenges**

Authors : **Arun Agarwal**

Department of Electronics & Communication Engineering, ITER, Siksha O Anusandhan Deemed to Be University, Bhubaneswar, India

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DOI: <https://doi.org/10.1007/s40031-022-00802-x>

Publication Date: 19 September 2022

Pages: 2189–2194

Title: **A Review on Voltage and Frequency Contingencies Mitigation Technologies in a Grid with Renewable Energy Integration**

Authors : **Hannan Ahmad Khan & Mohd Rihan**

Electrical Engineering Department, Zakir Husain College of Engineering & Technology, Aligarh Muslim University, Aligarh, India

**Mohd Zuhaib**

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DOI: <https://doi.org/10.1007/s40031-022-00819-2>

Publication Date: 21 October 2022

Pages: 2195–2205

Title: **Walk-Through MR World Approach for Students Using Mixed Reality**

Authors : **Manasvi J Maasthi, AS Prajwal Hebbar, H L Gururaj, V Janhavi & K Harshitha**

Department of Computer Science and Engineering, Vidyavardhaka College of Engineering, Mysuru, Karnataka, 570002, India

DOI: <https://doi.org/10.1007/s40031-022-00799-3>

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### Volume 103, Issue 6, December 2022

Title: **Pipe Inlays to Shorten the Development Lengths of Laminar Pipe Flows: A Numerical Study**

Authors : **F Durst**

FMP Technology GmbH, Am Weichselgarten 34, Erlangen, 91058, Germany

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DOI: <https://doi.org/10.1007/s40032-022-00886-w>

Publication Date: 10 October 2022

Pages: 1349–1360

Title: **Experimental and Numerical Modal Analysis of Hybrid Fiber-Reinforced Epoxy Composite Leaf Springs**

Authors : **Gökhan Erdoğan, Mehmet Güçlü & Yener Taşkın**

Department of Mechanical Engineering, Faculty of Engineering, Istanbul University-Cerrahpasa, Istanbul, Turkey

**Fatih Turan**

Department of Mechanical Engineering, Faculty of Engineering, Eskisehir Technical University, Eskisehir, Turkey

DOI: <https://doi.org/10.1007/s40032-022-00876-y>

Publication Date: 10 October 2022

Pages: 1361–1372

Title: **Influence of Profile Correction Factor on Asymmetric Spur Gear Efficiency**

Author : **R Prabhu Sekar**

Mechanical Engineering Department, Motilal Nehru National Institute of Technology Allahabad, Prayagraj, 211004, India

DOI: <https://doi.org/10.1007/s40032-022-00878-w>

Publication Date: 19 October 2022

Pages: 1373–1387

Title: **Investigations into Multi-scale Mechanical Characterization of Bamboo — a Natural Material**

Author : **Mannan Sayyad**

Department of Mechanical Engineering, AISSMS College of Engineering, Pune, 411001, India



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DOI: <https://doi.org/10.1007/s40032-022-00884-y>

Publication Date: 13 October 2022

Pages: 1389–1397

Title: **New Methodology for Preliminary Design of Buoyant Shrouded Airborne Wind Energy System**

Authors : **Mahdi Fathi & Gholamreza Farahani**

Department of Electrical Engineering and Information Technology, Iranian Research Organization for Science and Technology (IROST), Ahmadabad Mostoufi Rd., Azadegan Highway, P.O. Box 33535-111, Tehran, 3313193685, Iran

**Morteza Bayati**

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DOI: <https://doi.org/10.1007/s40032-022-00883-z>

Publication Date: 07 October 2022

Pages: 1399–1413

Title: **Oxidative Stabilization and Characterization of Electrospun Polyacrylonitrile Nanofiber Web on Different Substrates**

Author : **Sumit Dubal, Sachin Chavan & Pradeep Jadhav**

Department of Mechanical Engineering, College of Engineering, Bharati Vidyapeeth Deemed University, Pune, India

DOI: <https://doi.org/10.1007/s40032-022-00874-0>

Publication Date: 26 September 2022

Pages: 1415–1422

Title: **Research on Causes for Roll Sticking Copper and Anti-sticking Measures in Hot Rolling Considering Rolling Interface State**

Authors : **Guo-xing Chen & Hao-tian Guo**

School of Mechanical and Electrical Engineering, Hubei Polytechnic University, Huangshi, 435003, Hubei, People's Republic of China

**Hui-shuang Ji & Cai-yi Liu**

National Engineering Research Center for Equipment and Technology of Cold Strip Rolling, Yanshan University, Qinhuangdao, 066004, Hebei, People's Republic of China

DOI: <https://doi.org/10.1007/s40032-022-00885-x>

Publication Date: 28 September 2022

Pages: 1423–1431

Title: **Study on the Effect of Void Defect on Mechanical Properties of Carbon Fiber Composites by Finite Element Method**

Authors : **Yongliang Li, Li Zhou, Mingyuan Zhang & Chengyu Song**

School of Electromechanical and Automotive Engineering, Yantai University, Yantai, 264005, China

DOI: <https://doi.org/10.1007/s40032-022-00881-1>

Publication Date: 07 October 2022

Pages: 1433–1446

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- Title:** **Synthesis of Multi-position 3-PRS Manipulator Based on Spherical Constraints by Eliminating the Parasitic Motion**
- Author :** **Srinivasa Rao Pundru**  
Department of Mechanical Engineering, Mahatma Gandhi Institute of Technology, Hyderabad, 500075, India
- DOI:** <https://doi.org/10.1007/s40032-022-00887-9>
- Publication Date:** 26 October 2022
- Pages:** 1447–1454
- 
- Title:** **Synthesis, Physical and Mechanical Behavior of Agro-Waste RHA and Eggshell-Reinforced Composite Material**
- Authors :** **Shashi Prakash Dwivedi**  
Department of Mechanical Engineering, GL Bajaj Institute of Technology and Management, Greater Noida, India
- Rajat Yadav, Anas Islam & Vijay Kumar Dwivedi**  
Department of Mechanical Engineering, Institute of Engineering and Technology, GLA University, Mathura, India
- Shubham Sharma**  
Department of Mechanical Engineering, IK Gujral Punjab Technical University, Main Campus-Kapurthala, Jalandhar, Punjab, 144603, India
- DOI:** <https://doi.org/10.1007/s40032-022-00879-9>
- Publication Date:** 08 October 2022
- Pages:** 1455–1467
- 
- Title:** **Thermo-Mathematical Modeling and Multi-Objective Programming of the Solar-Assisted Heat Pump System Coupled to the Multi-Criteria Decision Analysis: A Case Study in Iran**
- Authors :** **Masoud Nasouri**  
School of Environment, Aras International Campus, University of Tehran, 5441656498, Tehran, Iran
- Hassan Hoveidi, Mohammad Javad Amiri & Gholamreza Nabi Bidhendi**  
School of Environment, College of Engineering, University of Tehran, 1417853111, Tehran, Iran
- DOI:** <https://doi.org/10.1007/s40032-022-00867-z>
- Publication Date:** 16 September 2022
- Pages:** 1469–1484
- 
- Title:** **A Review of Bone Regeneration Mechanisms and Bone Scaffold Fabrication Techniques (Conventional and Non-Conventional)**
- Authors :** **Ali Imran Ansari & Nazir Ahmad Sheikh**  
Mechanical Engineering Department, National Institute of Technology Srinagar, Srinagar, India
- DOI:** <https://doi.org/10.1007/s40032-022-00880-2>
- Publication Date:** 28 September 2022
- Pages:** 1485–1513
- 
- Title:** **Impacts of Fluid and Thermal Effect on Straight Through Labyrinth Seal: A Review**
- Authors :** **Saurav Das & S Amith Kumar**  
Gopalan International School, Bangalore, India

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Department of Mechanical Precision Engineering, Malaysia Japan International Institute of Technology, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia

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DOI: <https://doi.org/10.1007/s40032-022-00877-x>

Publication Date: 25 October 2022

Pages: 1515–1522

Title: **Pollutant Reduction Techniques Used for Nonroad Combustion Ignition Engines**

Authors: **Darshit P Surawala, Varsha Harpale & Deepti Khurge**

Electronics and Telecommunication Engineering Department, Pimpri Chinchwad College of Engineering, Pune, India

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### Volume 103, Issue 2, December 2022

Title: **A Case Study on Metallurgical Aspects of ‘Dhokra’ Art: An Ancient Traditional Lost Wax Casting Technique of Cu–Zn/Cu–Sn Alloy**

Authors: **Rahul Samanta, Gurudas Mandal & Arijit Sinha**

Department of Metallurgical Engineering, Kazi Nazrul University, Asansol, 713 340, India

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DOI: <https://doi.org/10.1007/s40033-022-00359-5>

Publication Date: 04 May 2022

Pages: 395–401

Title: **Abrasive Wear Behaviour of High-Velocity Oxy-Fuel Sprayed Molybdenum—10 wt% Silicon Carbide Composite Coatings**

Authors: **Shivakumar R Hiremath**

Department of Mechanical Engineering, PES University, Bengaluru, 560085, India

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DOI: <https://doi.org/10.1007/s40033-022-00365-7>

Publication Date: 22 May 2022

Pages: 403–415

Title: **Cold Glow Discharge Nitrogen Plasma Pretreatment of Banana Fibre for Improving the Mechanical Characterisation of Banana/Epoxy Composites**

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# Published Articles in IEI Journals

**Uttam Sharma & Kundan Viliya**

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DOI: <https://doi.org/10.1007/s40033-022-00356-8>

Publication Date: 19 May 2022

Pages: 417–429

Title: **Comparative Study on the Experimental Results on Low-Velocity Impact Characteristics of GLARE Laminates with Simulation Results from LS Dyna**

Authors : **Harish Kumar Muniswamy**

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DOI: <https://doi.org/10.1007/s40033-022-00355-9>

Publication Date: 06 May 2022

Pages: 431–442

Title: **Data-Driven Search for the Optimal Ag–Pd–Pt-Based Electrode Alloy Chemistry for ZnO-Based Methane Sensor**

Authors : **Suman Ghosal, Sanghamitra Ghosal & Partha Bhattacharyya**

Department of Electronics and Telecommunication Engineering, Indian Institute of Engineering Science and Technology, Shibpur, Howrah, West Bengal, 711103, India

DOI: <https://doi.org/10.1007/s40033-022-00353-x>

Publication Date: 16 May 2022

Pages: 443–451

Title: **Deployment of Continuous Miner in under Ground Coal Mine: A Case Study of Sarpi Mine**

Author : **Subrata Samanta, Rabindra Kumar Sinha & Hemant Kumar**

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DOI: <https://doi.org/10.1007/s40033-022-00349-7>

Publication Date: 16 May 2022

Pages: 453–471

Title: **Effect of Extrusion on the Physical and Mechanical Properties of Briquette Made with Blast Furnace Flue Dust and Iron Ore Fines**

Authors : **Ritwik Das, Manas Kumar Mondal & Susanta Pramanik**

Metallurgical and Materials Engineering Department, National Institute of Technology, Durgapur, India

DOI: <https://doi.org/10.1007/s40033-022-00360-y>

Publication Date: 09 May 2022

Pages: 473–478

# Published Articles in IEI Journals

**Title:** **Effect of Heat Treatment on Compressive Behavior of Selectively Laser Melted Ti64 Scaffolds**  
**Authors :** **Palash Mondal & Amit Karmakar**  
 Department of Mechanical Engineering, Jadavpur University, Kolkata, 700032, India  
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**Apurba Das & Amit Roy Chowdhury**  
 Aerospace Engineering and Applied Mechanics Department, Indian Institute of Engineering Science and Technology-Shibpur, Howrah, 711103, India  
**DOI:** <https://doi.org/10.1007/s40033-022-00362-w>  
**Publication Date:** 23 May 2022  
**Pages:** 479–487

**Title:** **Effect of Wollastonite Filler on the Experimental and Microstructural Analysis of Epoxy Composite Reinforced with E-glass Fibre**  
**Authors :** **K S Lokesh & D Shrinivasa Mayya**  
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**DOI:** <https://doi.org/10.1007/s40033-022-00347-9>  
**Publication Date:** 19 April 2022  
**Pages:** 489–496

**Title:** **Electrical Characterization of Sodium Cadmium Borate Glasses Doped With TiO<sub>2</sub>**  
**Authors :** **Sonam Raheja, Ravinder Singh & Moin Uddin**  
 Department of Physics, School of Engineering and Technology, Apeejay Stya University, Sohna – Palwal Road, Gurugram, India  
**DOI:** <https://doi.org/10.1007/s40033-022-00350-0>  
**Publication Date:** 25 April 2022  
**Pages:** 497–503

**Title:** **Evaluation of the Wear Behaviour of Thermally Aged E Glass Reinforced Epoxy Composite Filled with Wollastonite Using Taguchi L27 Technique**  
**Authors :** **K S Lokesh**  
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DOI: <https://doi.org/10.1007/s40033-022-00343-z>

Publication Date: 21 April 2022

Pages: 505–512

Title: **Experimentation on Enhancing Mechanical Characteristics of E-glass Fiber-Strengthened Epoxy Resins with Fillers**

Authors: **S M Nur, M H Parveg & S Ahmed**

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DOI: <https://doi.org/10.1007/s40033-022-00361-x>

Publication Date: 16 May 2022

Pages: 513–522

Title: **Friction and Wear performance of Hot Extruded AA7075/AlN/Gr Hybrid Composites**

Authors: **Amol Gulabrao Kamble**

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DOI: <https://doi.org/10.1007/s40033-022-00344-y>

Publication Date: 21 April 2022

Pages: 523–537

Title: **Heat and Humidity Problems in Indian Coal Mines Mass Production Panels and Their Remedies**

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DOI: <https://doi.org/10.1007/s40033-022-00364-8>

Publication Date: 23 May 2022

Pages: 539–547

Title: **Hydrometallurgical Processing of Gold Ore**

Authors: **P K Fedotov**

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DOI: <https://doi.org/10.1007/s40033-022-00339-9>

Publication Date: 21 April 2022

Pages: 549–562

Title: **Investigation of TiAlN, AlTiN, and TiAlSiN Coated Inserts on the Machining Performance of AISI 420 Steel and Multi-Objective Optimization of Process Parameters**

Authors: **Moganapriya Chinnasamy, Sathish Kumar Palaniappan & Samir Kumar Pal**

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DOI: <https://doi.org/10.1007/s40033-022-00346-w>

Publication Date: 10 June 2022

Pages: 563–573

Title: **Mechanical Properties of MWCNT Reinforced Epoxy Nanocomposites: Experimental, Micromechanical and Numerical Study**



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- Authors :** **Krishnendu Bhowmik, Saroj Kumar Basantia, Niloy Khutia & Amit Roy Chowdhury**  
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- DOI:** <https://doi.org/10.1007/s40033-022-00358-6>
- Publication Date:** 13 June 2022
- Pages:** 575–586
- Title:** **Removal of Atrazine using Rice Husk Biochar: Characteristic and Equilibrium Studies**
- Authors :** **Vijetha Ponnamp & Subbaiah Tondepudi**  
Department of Chemical Engineering, Vignans Foundation for Science Technology and Research, Vadlamudi, India  
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Department of Biotechnology, Vignans Foundation for Science Technology and Research, Vadlamudi, India
- DOI:** <https://doi.org/10.1007/s40033-022-00345-x>
- Publication Date:** 02 April 2022
- Pages:** 587–590
- Title:** **Smelting and Selective Reduction of Limonitic Laterite Ore in Mini Blast Furnace**
- Authors :** **Sungging Pintowantoro, Patrick Christopher Panggabean, Yuli Setiyorini & Fakhreza Abdul**  
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- DOI:** <https://doi.org/10.1007/s40033-022-00348-8>
- Publication Date:** 12 April 2022
- Pages:** 591–600
- Title:** **Stir Cast Al–Cu–SiCp Metal Matrix Composites: Effect of SiC Particles on the Mechanical Properties and Optimization of EDM Process Parameters**
- Authors :** **Biplab Bhattacharjee, Nabarun Biswas, Ram Naresh Rai & Kishan Choudhuri**  
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- DOI:** <https://doi.org/10.1007/s40033-022-00352-y>

# Published Articles in IEI Journals

Publication Date: 27 April 2022

Pages: 601–610

Title: **Synthesis of Alfa (*Stipa tenacissima* L.)/Hemp Fiber-Reinforced UHMWPE: Impact of Fibers on Mechanical, Microstructural and Aspect Properties**

Authors: **B Vinod, S Suresh & S Sunil Kumar Reddy**

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DOI: <https://doi.org/10.1007/s40033-022-00357-7>

Publication Date: 29 April 2022

Pages: 611–620

Title: **Synthesis of Fe–Al Intermetallic by Mechanical Alloying Process**

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DOI: <https://doi.org/10.1007/s40033-022-00340-2>

Publication Date: 25 April 2022

Pages: 621–628

Title: **Carbon Cold Emitter Data Interpretation: Should We Go for Millikan–Lauritsen Plot over Fowler–Nordheim Approach for Developing Display Device**

Authors: **M Goley, S Chaudhary, A Pandey, V Mandal & D Banerjee**

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DOI: <https://doi.org/10.1007/s40033-022-00351-z>

Publication Date: 25 April 2022

Pages: 629–638

Title: **Corrosion Behaviour of Engineering Materials: A Review of Mitigation Methodologies for Different Environments**

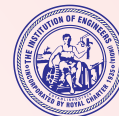
Authors: **Sheikh Aamir Farooq, Ankush Raina, Mir Irfan Ul Haq & Ankush Anand**

# Published Articles in IEI Journals

- School of Mechanical Engineering, Shri Mata Vaishno Devi University, Katra, Jammu and Kashmir, 182320, India
- DOI: <https://doi.org/10.1007/s40033-022-00367-5>
- Publication Date: 15 June 2022
- Pages: 639–661
- Title: **Study of the Technology for Gold Recovery from Gravity-Flotation Concentrate from Ore Beneficiation with the use of Oxidizing Reagents**
- Authors: **A K Koizhanova, A N Berkinbayeva, D R Magomedov, O V Atanova, E M Kamalov & M B Erdenova**  
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Physics Department, Faculty of Science and Mathematics, Universiti Pendidikan Sultan Idris, 35900, Tanjung Malim, Perak, Malaysia
- DOI: <https://doi.org/10.1007/s40033-022-00366-6>
- Publication Date: 13 June 2022
- Pages: 663–672



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## Journal of The Institution of Engineers (India): Series E

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### Volume 103, Issue 2, December 2022

Title: **Control of a Waste Water Treatment Plant Using Fuzzy Logic Controller**

Authors: **Sreenath Yelagandula & Prabhaker Reddy Ginuga**

Department of Chemical Engineering, University College of Technology, Osmania University, Hyderabad, Telangana, 500007, India

DOI: <https://doi.org/10.1007/s40034-022-00241-9>

Publication Date: 29 April 2022

Pages: 167–177

Title: **Designing of Woven Textile Fabrics for Greenhouse Covering Material**

Authors: **Amal Ray, Niranjana Bhowmick & Subrata Ghosh**

Department of Textile Technology, Dr B R Ambedkar National Institute of Technology, Jalandhar, 144011, India

DOI: <https://doi.org/10.1007/s40034-022-00247-3>

Publication Date: 16 August 2022

Pages: 179–188

Title: **Downstream Microbial and Physiochemical Assessment of Aami River and Analysis of Sewage and Industrial Discharge**

Authors: **Maharshi Yadav, Vitthal L Gole & Jyoti Sharma**

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DOI: <https://doi.org/10.1007/s40034-022-00240-w>

Publication Date: 29 April 2022

Pages: 189–198

Title: **Effect of Water Absorption on Mechanical Properties of Treated and Untreated Hemp Fiber Reinforced Polyester Composites**

Authors: **R S N Sahai, Deepankar Biswas & Asit B Samui**

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DOI: <https://doi.org/10.1007/s40034-022-00245-5>

Publication Date: 30 August 2022

Pages: 199–208

Title: **Enhancement in Dye Decolorization and Stain Removal Property of Cotton Fabric Coated with a Combination of Different TiO<sub>2</sub> Forms (Both P-25 and Anatase TiO<sub>2</sub>)**

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DOI: <https://doi.org/10.1007/s40034-022-00253-5>

Publication Date: 06 October 2022

Pages: 209–218

Title: **Factors Influencing the Removal of Boron from Fracturing Fluid Flowback by Chemical Oxidative Precipitation**

Author : **T Yu, X Zhang, J X Liu & B Kou**

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DOI: <https://doi.org/10.1007/s40034-021-00232-2>

Publication Date: 22 October 2021

Pages: 219–226

Title: **Hydrothermal Treatment for Imparting Wash-Durable UV Protection Property in Cotton Using Zinc Oxide Nanoparticles**

Authors : **Anu Mishra**

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DOI: <https://doi.org/10.1007/s40034-022-00250-8>

Publication Date: 05 September 2022

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Pages: 227–231

Title: **In-Situ Polymerization of Maleic Acid in Presence of Aloe vera Gel for Development of Eco-Friendly Eri Silk-based Handlooms**

Authors: **Ashis Narayan Amita Banerjee & Debasish Das**

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DOI: <https://doi.org/10.1007/s40034-022-00237-5>

Publication Date: 05 February 2022

Pages: 233–244

Title: **Mechanical and Tribo-performance Analysis of Linz Donawitz Sludge-Filled Glass–Epoxy Composites using Taguchi Experimental Design**

Authors: **Abhilash Purohit, Vaishnavi Tripathy & Priyadarshi Tapas Ranjan Swain**

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DOI: <https://doi.org/10.1007/s40034-021-00236-y>

Publication Date: 23 February 2022

Pages: 245–251

Title: **Permeability and Moisture Management Properties of Denim Fabric Made from Cotton, Spandex, and Polyester**

Authors: **Biruk Fentahun Adamu**

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DOI: <https://doi.org/10.1007/s40034-022-00249-1>

Publication Date: 05 September 2022

Pages: 253–258

Title: **Photocatalytic and Photoluminescence Studies of La, Ce, and Dy Co-doped ZnO Nanoflowers**

Authors: **Syed Irtiga & Atikur Rahman**

Department of Metallurgical and Materials Engineering, National Institute of Technology Srinagar, Hazratbal, Srinagar, 190006, India

DOI: <https://doi.org/10.1007/s40034-021-00233-1>

Publication Date: 04 January 2022

Pages: 259–270

Title: **Research on Post-Press Technology on Fabric Packaging's Interaction Design**

Authors: **Yana Qin & Xuan Wang**

Changsha University, Changsha, 410022, Hunan, China

DOI: <https://doi.org/10.1007/s40034-021-00231-3>

Publication Date: 16 October 2021

Pages: 271–282

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- Title:** **RSM-Based Optimization Approach in Production of Anionic Methyl Ester Sulfonate for Commercial Detergent Application**  
**Authors :** **Neeta Singh & S K Gupta**  
 Department of Chemical Engineering, Harcourt Butler Technical University, Kanpur, Uttar Pradesh, 208002, India  
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**DOI:** <https://doi.org/10.1007/s40034-021-00234-0>  
**Publication Date:** 22 November 2021  
**Pages:** 283–291
- Title:** **Solar Radiation Transmittance Characteristics of Textile Woven Fabrics Suitable for Greenhouse Covering Materials**  
**Authors :** **Amal Ray, Subrata Ghosh & Niranjana Bhowmick**  
 Department of textile technology, Dr B R Ambedkar National Institute of Technology, Jalandhar, 144011, Punjab, India  
**DOI:** <https://doi.org/10.1007/s40034-021-00223-3>  
**Publication Date:** 22 November 2021  
**Pages:** 293–303
- Title:** **Study of Yarn Quality Prediction Model based on Fuzzy Comprehensive Evaluation**  
**Authors :** **Yonghua Wang, Jiuxiang Song, Baowei Zhang, Hao Jiang & Chuang Wang**  
 Zhengzhou University of Light Industry, Zhengzhou, Henan, China  
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**DOI:** <https://doi.org/10.1007/s40034-022-00238-4>  
**Publication Date:** 02 March 2022  
**Pages:** 305–313
- Title:** **The use of Hibiscus sabdariffa Flower extracts in Cotton Fabric and Wool Yarn Dyeing**  
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**DOI:** <https://doi.org/10.1007/s40034-021-00235-z>  
**Publication Date:** 04 January 2022  
**Pages:** 315–321
- Title:** **Thermal Activated Adsorbent from D. sissoo Sawdust for Fluoride Removal: Batch Study**  
**Authors :** **Saurabh Joshi, Mansi Garg & Somen Jana**

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- DOI: <https://doi.org/10.1007/s40034-022-00244-6>  
 Publication Date: 04 July 2022  
 Pages: 323–337
- Title: **Tribo-performance Analysis of an Agro-Waste-Filled Epoxy Composites Using Finite Element Method**  
 Authors : **Priyabrat Pradhan, Abhilash Purohit, Jayshree Singh, Chandana Subudhi, Sushree Sangita Mohapatra & Debashish Rout**  
 Department of Mechanical Engineering, Synergy Institute of Engineering & Technology, Dhenkanal, India  
**Bibhuti Bhusan Sahoo**  
 Department of Mechanical Engineering, Vellore Institute of Technology, Chennai, India
- DOI: <https://doi.org/10.1007/s40034-022-00243-7>  
 Publication Date: 16 August 2022  
 Pages: 339–345
- Title: **Yarn Hairiness Prediction by Generalized Regression Neural Network based on Harris Hawk Optimization**  
 Authors : **Jiuxiang Song**  
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**Tingting Fan**  
 Jilin International Studies University, Changchun, Jilin, China
- DOI: <https://doi.org/10.1007/s40034-022-00246-4>  
 Publication Date: 26 July 2022  
 Pages: 347–355
- Title: **A New Perspective on the Green Strategy of Close Cycle Dissociation of H<sub>2</sub>S**  
 Authors : **Bachcha Lal**  
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**Arvind Singh**  
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- DOI: <https://doi.org/10.1007/s40034-022-00239-3>  
 Publication Date: 30 April 2022  
 Pages: 357–363



# Nota Bene

We would like to thank our erudite members for sharing their professional achievements through the IEI Epitome and making the content more abounding and at the same time inspiring many others to share their accomplishments as well. To streamline the process and make it convenient for the member to give their inputs we would like to obtain the information in a more structured and comprehensive manner. We would request our members to send the details of their achievements as per the appended formats only.

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*# Reporting of Award of stipend/fellowship at PG/PhD level and awards from esoteric events/communities may be avoided.*

# Nota Bene

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(x) Issuing Authority	
(xi) Serial No	
(xii) Patent No	
(xiii) Date of filing (DD/MM/YYYY)	
(xiv) Date of Grant (DD/MM/YYYY)*	
(xv) Patentee	
(xvi) Details of Patent	
(xvii) Term for which the above (ix) has been granted	

\* Copy of Certificate of the Grant of Patent

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(vii) Organization of affiliation	
(viii) Membership No (please use the prefix F/M/AM as the case may be)	
(ix) Title of Paper	
(x) Name of Journal/Proceeding/Technical Volume	
(xi) Volume No (Not required for Indian Engineering Congress)	
(xii) Issue No (Not required for Indian Engineering Congress/Annual Technical Volumes of IEI)	
(xiii) Theme (Only for Technical Volumes of IEI)	
(xiv) DOI: (Not required for Indian Engineering Congress/Annual Technical Volumes of IEI)	
(xv) ISSN	
(xvi) Date of Publication (Date-Month-Year)	
(xvii) Co-authors (if any)	
(xviii) Abstract in full	
(xix) 5/6 Keywords	
(xx) Supporting Documents/links [which are clearly indicative of the incumbent's achievement(s)]	

*# publications in local seminar, conference and symposia will not be accounted*

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(vii) Organization of affiliation	
(viii) Membership No (please use the prefix F/M/AM as the case may be)	
(ix) Title of Book	
(x) Title of Book Chapter	
(xi) Book Chapter Number	
(xii) Publisher Details	
(xiii) ISBN	
(xiv) Date of Publication (Date-Month-Year)	
(xv) Co-authors (if any)	
(xvi) About the book (100-150 words)	
(xvii) Supporting Documents (complimentary copies for IEI Headquarters)/links [which are clearly indicative of the incumbent's achievement(s)]	

*\* accommodate works published in journals/reputed conference proceedings/books for the last one year*



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**T**he Institution of Engineers (India) reserves a coveted privilege in being the largest multi-disciplinary professional body of engineers encompassing 15 engineering disciplines with a Corporate membership of over 2.4 lakhs maintaining a national/international presence through hundred twenty five Centres and six Overseas Chapters, Fora's and Organ (Engineering Staff College of India). The Institution has been disseminating the various information through IEI-Epitome and other publications.

We would like to share with you that we are now providing the facility to advertise engineering / technical products/services, information brochure, recruitment notices etc. in our official publication portal IEI Epitome (12 issues-140000 reach online). Besides, IEI Epitome is also uploaded on our website ([www.ieindia.org](http://www.ieindia.org)) on a monthly basis and is accessible to all free of cost. Given its immense footprint in the engineering and technical diaspora spanning the globe, IEI with its distinguished heritage of a century provides you the ideal portal to connect with the National and International Engineering and Technical Community at very competitive rates. We invite you to take this unique and privileged opportunity to advertise and communicate your service and product portfolios under our prestigious banner and make us your brand emissaries in your promotional campaigns.

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# Continuing Professional Development Programmes



## Engineering Staff College of India

Autonomous Organ of The Institution of Engineers (India)  
(IMS [ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO 45001:2018],  
ISO/IEC 17025:2017 Certified, AICTE & CEA Recognized Institution)

### CONTINUING PROFESSIONAL DEVELOPMENT PROGRAMMES (CPDP) FOR THE MONTH OF JANUARY 2023

Sl. No.	Name of the Course	Scheduled Dates
1.	Mechanical Testing of materials	02 – 04 Jan
2.	Pollution prevention plan and management of Environment towards Industries	03 – 05 Jan
3.	Vibrations, Balancing, Alignment and Condition Monitoring of Rotating Machinery	03 – 05 Jan
4.	Web Application Penetration Testing and Web Security	04 – 06 Jan
5.	Power Distribution Reforms - Issues of Open Access - Power Exchange	04 – 06 Jan
6.	NBA – SAR Filling preparedness for Assessment	04 – 06 Jan
7.	National Action Plan on Climate Change – GoI Missions	09 – 11 Jan
8.	Insurance and Risk Management in Power Utilities	09 – 11 Jan
9.	Satellite based property mapping in Urban Local Bodies	09 – 11 Jan
10.	Network & Security Administration	09 – 13 Jan
11.	Hazardous Waste Management & Prevention	16 – 17 Jan
12.	Value Engineering for Manufacturing Areas	16 – 18 Jan
13.	Implementation of IoT in Transmission & Distribution	17 – 19 Jan
14.	Planning, Design, Construction and O&M of Lift Irrigation Schemes	17 – 20 Jan
15.	DevOps Tools and Practices for Software Development	17 – 20 Jan
16.	Advanced Intelligent Transportation System applications for Highways	18 – 20 Jan
17.	Root cause analysis and defect prevention methods and techniques in automobile, aerospace and naval applications	18 – 20 Jan
18.	Design and Optimization of Mineral Conveying Systems & Mineral Handling Plants	18 – 20 Jan
19.	ISO 9001 : 2015 QMS – Effective Implementation & Internal Auditor Training	18 – 20 Jan
20.	Plastic waste management	23 Jan
21.	Circular economy - Conservation of natural resources in construction and O&M	23 – 25 Jan
22.	CERC Regulations Including Tariff Regulations	23 – 25 Jan
23.	Power Trading, Power Exchanges & Merchant Power Plants	31 Jan – 03 Feb



# Call for Papers for Technorama

## NOTIFICATION

It is our great pleasure to inform you that the Council of The Institution of Engineers (India) decided to resume the publication of the theme based **e-Technical Magazine 'Technorama'** in lieu of Annual Technical Volume being published earlier.

As decided, three issues of the 'Technorama' will be published in a calendar year as per details given below:

- (1) First Trimester Issue (Coverage: Agriculture, Architecture, Chemical, Civil, Environment and Textile Engineering)
- (2) Second Trimester Issue (Coverage: Aerospace, Marine, Mechanical, Metallurgical & Materials, Mining Engineering and Production)
- (3) Third Trimester Issue (Coverage: Electrical, Electronics & Telecommunication Engineering and Computer Engineering)

You are requested to submit paper on any one of the topics which are given in the table below:

Schedule of TECHNORAMA	Division	Themes approved for forthcoming issue	
First Trimester Issue (April of every year)	Agricultural	Integrated Post Harvest Management and Supply Chain	for April 2023 issue
	Architectural	Intelligent Buildings: Design and Technology	
	Chemical	To be intimated	
	Civil	Rapid Transport System	
	Environmental	Emerging Energy Scenario for Sustainable Development	
Second Trimester Issue (August of every year)	Textile	Development and Application of Functional Textiles	for August 2023 issue
	Aerospace	To be intimated	
	Marine	Advancements in Ship Building Technology - Way Ahead towards New Normal	
	Mechanical	Applications of Artificial Intelligence and Machine Learning in Mechanical Engineering - The Post Pandemic Pathway	
	Metallurgical & Materials	Integrated Computational Materials Engineering (ICME)	
Third Trimester Issue (December of every year)	Mining	1.Coal Bed Methane and Non-conventional Fuel Gases 2.Future of Mining	for December 2022 issue
	Computer	Technology Convergence over 5G Network	
	Electrical Electronics & Telecommunication	Energy Conservation Recent Trends in Antenna Technology for Modern Wireless Communication System	

We welcome you to submit the soft copy of Original Papers/Case Studies/Articles of Professional interest in MS Word format on the mentioned topic at [technorama@ieindia.org](mailto:technorama@ieindia.org) for possible publication in the Technorama. For Template of Paper and Copyright Declaration form please visit the following link:

[https://www.ieindia.org/webui/IEI-Activities.aspx#Call\\_Papers](https://www.ieindia.org/webui/IEI-Activities.aspx#Call_Papers)

Kindly mention the detailed affiliation of the authors along with e-mail id and phone number in the Declaration Form for further needful action.

You are also required to submit the **"PLAGIARISM CHECK REPORT"** of the paper submitted by you along with the paper.

In the subject clearly mention the topic under which the paper is being submitted.

We look forward to your contribution.