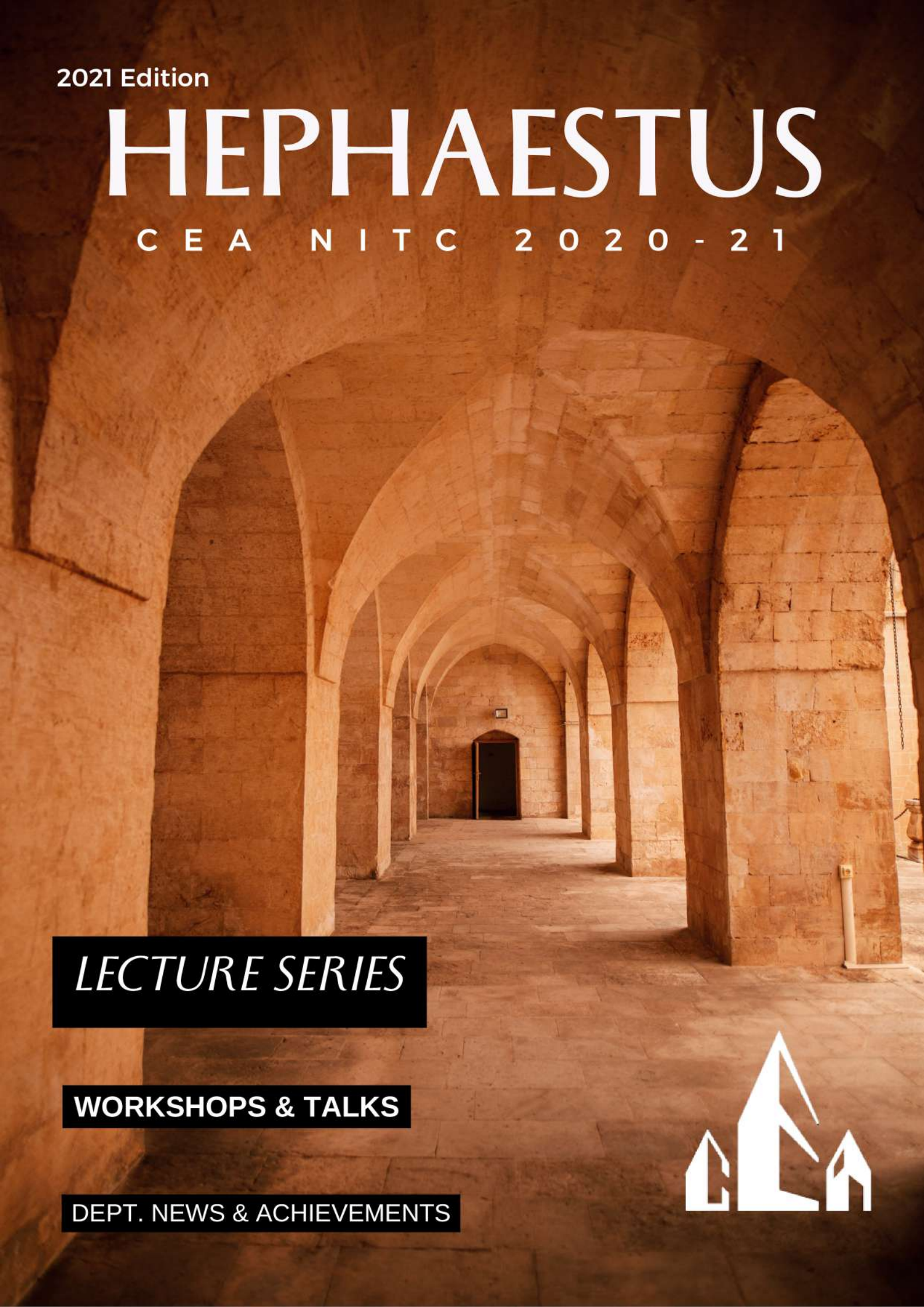

2021 Edition
HEPHAESTUS
CEA NITC 2020-21
LECTURE SERIES
WORKSHOPS & TALKS
DEPT. NEWS & ACHIEVEMENTS

LECTURE SERIES

"Responsible Consumption and production: Resource Efficiency Transformation"

25th Sep 2020, 4PM to 5PM

He explained in detail about how sustainable consumption and production aims to inspire governments, businesses, and citizens to do more and better with less, as it promotes economic growth without environmental degradation, and how it also increases resource efficiency and promotes sustainable lifestyles. His talk was very informative in understanding all these concepts.

By Prof. Dr. Kurian Joesph

"Transforming Our World : The 2030 agenda for living well within planetary boundaries"

17th July 2020 , 4PM to 5PM

With times that demand revolutionary changes in the way we inhabit this planet, the webinar held by Prof. Dr. Kurian Joseph proved to be insighful. Prof. Dr. Kurian joseph is the Director of Centre for Climate Change and Disaster Management (CCCDM) and the Professor at Centre for Environmental Studies, Anna University, Chennai.

His explanations about the sustainable development goals which is a plan of action for people, the planet, and prosperity were precise and to the point. The bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path by setting the 17 Sustainable Development Goals to be achieved by 2030 were discussed.

LECTURE SERIES

"Safety and Sustainability of Dam infrastructure"

28th Aug 2020;
4:00PM to 5:00PM

Questions regarding the safety and stability of dams increasing day by day. Starting from the failure of the Banqiao dam back in 1975 to the recent collapse of the Brumadinho dam in 2019 have layed a strong foundation for a series of doubts regarding the safety of these massive structures.

By Dr. B Ravi Kumar Pillai

"Integrated Water resources development and management"

24th July 2020, 4PM to 5PM

In order to attain and maintain long term sustainability of water resources, more holistic approaches are required.

Dr. B Ravi Kumar Pillai, water resources and engineering management professional, honoured the event by speaking on Integrated Water Resources Development And Management. With over 33 years of experience, working in many of India's water resources projects, he had plenty of delightful insights to share.

Process's that promotes the coordinated development and management of water, land and related resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems were the primary focus of the webinar.

LECTURE SERIES

"Sustainable Township development Post COVID 19 pandemic"

By Er. Sanjeev Srivastva

31st July 2020, 4PM to 5PM

To spread awareness of such changes, Civil Engineering Association (CEA) has conducted a webinar titled 'Sustainable Township Development Post COVID19 Pandemic' by Er. Sanjeev Srivastava, who is the managing director of Assotech Limited. A sustainable city should be able to satisfy current needs without jeopardising the ability of future generations to satisfy their own. The COVID19 pandemic has influenced almost every sphere of human society and pushed decision-makers to follow sustainable methodologies. The domain of township development also had some transitions when concepts such as integrated townships etc. came into forefront.

"Civil Engineering in Ocean for sustainable development"

By Dr. Sanil Kumar

21st Aug 2020, 4PM to 5PM

Dr Sanil Kumar, Chief Scientist and Head, Ocean Engineering, CSIR, National Institute of Oceanography delivered a speech to give an insight into the topic.

Sustainable Marine Structures focuses on the issues of limiting human-caused damage to marine ecosystems from the development of ocean and coastal areas and on the utilization and conservation of ocean resources it requires systematic analysis, precise design parameters and determination of the structural response.

LECTURE SERIES

"Design & Construction of Nuclear Plants"

By Er. C S Unnikrishnan Nair

4th September 2020; 4:00PM to 5:00PM

The design of a nuclear power plant needs to consider specific site characteristics, operational aspects, and future decommissioning plans to achieve the highest levels of safety. A comprehensive and thorough safety assessment is also mandatory to ensure the adequate protection of workers, the public and the environment.The objective of the design is to provide for the safe and effective operation of the nuclear power plant, minimising the likelihood of accidents and ensuring that their consequences can be reliably mitigated. Er. C.S Unnikrishnan Nair, General Manager and Head of Engineering, Nuclear and Special Bridges, Larsen & Toubro, Mumbai delivered a session to give these insights.

"Atmospheric Land and Ocean Modelling for Civil engineering Applications"

By Er. Jossey P Jacob

11th September 2020; 5:00PM to 6:00PM

The weather forecasts, seasonal forecasts and environmental issues such as floods and droughts that we often look at can be scientifically modelled for forecasting and mitigation efforts with a knowledge of hydrology and fluid flow problem solving skills combined with various satellite data products.

Er. Jossy P. Jacob who is an analyst at NASA, Greenbelt, Maryland, USA shared her knowledge on Atmospheric, Land and Ocean Modelling For Civil Engineering. The discussion paved the way to an understanding and awareness about numerous opportunities available for a civil engineer.

LECTURE SERIES

"Valuation of Real estate and professional valuation practice"

By Dr. Srinath Shetty K

18th September 2020; 4:00PM to 5:00PM

Real estate is an allied domain discipline to civil engineering where the concepts of economics, marketing etc are applied in valuation and acquisition of properties. This is a dynamically evolving industry and involves multi-disciplinary approaches.
With the aim of providing exposure to such techniques and practices, Civil Engineering Association (CEA) has conducted a webinar titled 'Valuation of Real Estate and Professional Valuation Practice 'as a part of webinar series organised by NITC Civil Engineering alumni [1982-86]. The speaker for this webinar was Dr Srinath Shetty K, who is a professor in civil engineering at NMAM Institute of Technology, NITTE Karnataka.

"Impact of civil engineering in new world order"

By Dr. Mukesh Kashyap

1st October 2020; 5:00PM to 6:00PM

Nowadays, it is imperative to expose the younger generation to the fast-changing world order in the construction industry. To give insight into the modern day issues and future global challenges for Civil Engineers in sustainable development, a webinar was conducted by CEA with the speaker Dr. Mukesh Kashyap, Senior Lecturer, Construction Management at Nottingham Trent University, UK.
The talk on 'Impact of Civil Engineering in the New World Order' focussed on the modern day issues and future global challenges for Civil Engineers in sustainable development as well as exposure of the younger generation to the fast changing world order,especially in the emerging construction markets with the advancement of technology, communication and construction processses.

LECTURE SERIES

"Civil engineer's role in high voltage transmission & distribution projects"

By Er. Umesh Kumar Singh

9th October 2020; 5:00PM to 6:00PM

Modern day Engineering firms are usually multi-disciplinary in nature. Civil engineer working on transmission lines will manage transmission line projects, detailing cost-effective designs. To be industrially competent, aspiring civil engineers must be exposed to such opportunities and practices. Civil Engineering Association (CEA) has conducted a webinar titled 'Civil Engineer's Role in High Voltage Transmission & Distribution Projects 'as a part of webinar series organised by NITC Civil Engineering alumni [1982-86]. The speaker for this webinar was Er. Umesh Kumar Singh, who is consultant program manager& director, AMEREN; President of US Engineering Consultant inc / US Hospitality/ USASSS Properties / KABJ Alliance.

"Sky and beyond: global career opportunities for civil engineers"

By Er. Aji Mathew

16th October 2020; 5:00PM to 6:00PM

Adequate awareness of opportunities has always been a key aspect in shaping one's career path. Aspiring civil engineers are always advised to develop a good understanding of industry dynamics and potential career choices. To provide guidance in this regard, Civil Engineering Association (CEA) has conducted a webinar titled "Sky And Beyond, Global Career Opportunities For Civil Engineers " as a part of webinar series organised by NITC Civil Engineering alumni [1982-86]. The speaker for this webinar was Er. Aji Mathew , who is the chief consulting engineer at SASS consulting(Hudson, USA).

LECTURE SERIES

"Railway and Railway bridges : case study of demolition of bowstring girder concrete road over bridge in 24hrs."

By Er. Babu Zacharias

29th October 2020; 4:00PM to 5:00PM

A webinar was conducted for a comprehensive presentation on one such case study- Case Study of Demolition of Bowstring Girder Concrete Road Over Bridge In 24 Hours with Er. Babu Zacharias, Assistant Executive Engineer, Southern Railway, Ernakulam.

The project was executed by Er. Babu Zacharias and was preented with photos and videos of demolition exercises. The presentation made the participants to get an actual feeling and challenges of the works a Civil Engineer has to face.

"Foreseen challenges in underground construction"

By Er. Johnson Mathew

23rd October 2020; 4:00PM to 5:00PM

Is utilising underground space for transportation easy? Just dig and move vehicles through space? Absolutely No!
A webinar was to explain about the foreseen challenges citing construction of tunnels and metro stations chaired by Mr. Johnson Mathew, a geotechnical engineer and a project management professional, with over 30 years of experience in India and abroad.
1. The major subsurface problems in underground constructions like squeezing ground conditions, upheavals etc..
2. About the recent developments in a India like construction longest 11.21 km PirPanjal railway tunnel.
The webinar made participants aware of challenges posed by underground constructions and their engineering solutions.

PLACEMENT TALK

A preplacement talk was organised by Centre for Career development. It was a very insightful program where the TPOs gave information about how the placement/ internship processes are going inside the campus. **Dr Harikrishnan**, Asst Professor, CED department emphasized the skills that students have to acquire while they apply for the internships/ placements. He also talked about how the training for the placements are done and what all are the major companies that will be visiting the campus regularly. Also they discussed the rules and regulations of placement/ internship procedure and strictly warned about the malpractices and the consequences of it.

It was truly an informative session and through this session the students understood the importance of Placements/ internship and the trend that is followed in the campus about the same.

"INTO EXCEL" WORKSHOP

CEA presented a workshop called “Into Excel”, which was conducted by our Alumni, **Er. Rakesh D. Shenoy**, Senior Engineer, L&T Constructions.

MS Excel is a key tool for any modern computational application. Ad as budding engineers, the knowledge of MS Excel would be useful for our jobs.

The course was open to all civil engineering batches and was completely free. It commenced on 31st of January and continued every Sunday for an hour (2PM to 3PM) for up to 6 weeks. Participants had to have access to a desktop or laptop with Excel (either online through office.com or through offline downloaded mode). Participants who had 100% attendance and 50% marks in the final test conducted, were given certificates for successful completion of course.

LIFE AS A CIVIL ENGINEERING PROFESSIONAL: AMERICAN PERSPECTIVE

9th July, 2020; 4:30PM to 6:00PM

CEA and ICI, NITC Students Chapter jointly hosted a panel discussion on "Life As A Civil Engineering Professional : An American Perspective". The panelists who joined for the session are four of our NITC alumni who are currently working in the US.

1. **Mr Imran Haris** – a construction project manager working at Keystone Group, Indiana.
2. **Ms Meera M Gopal** – a structural engineer working at WSP, Georgia.
3. **Mr Mihir Pillai** – a tunnel engineer working at WSP, New York.
4. **Ms Krishna Haridas** – a structural engineer working at Mueser Rutledge Consulting Engineers, New York.

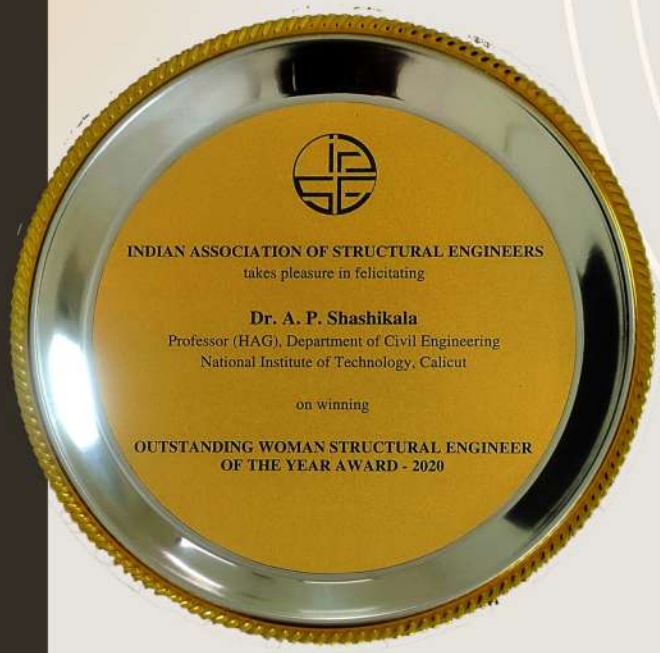
This discussion gave an idea of the American life of a civil engineer, the challenges faced and perks of working there.

CIVIL ENGINEERS IN THE GOVERNMENT SECTOR

21st June, 2020; 2:00PM to 3:00PM
By **Mr. Deepu Krishnan**

It's always a challenge for a student to choose his career path, with opportunities ranging from corporate to government. To give an insight into the government sector, CEA and ICI jointly hosted a webinar on "Civil Engineers In The Government Sector" which is Mr. Deepu Krishnan, an NITC alumni, who is currently working in the IRAS. He cracked UPSC civil service exam 2013 (AIR-691), UPSC engineering service exam 2011 (AIR-59) and with over 10 years of experience in government sector, Mr. Deepu Krishnan gave an overview of the opportunities in government sector and also took the students through his journey.

ACHIEVEMENTS



Outstanding Woman Structural Engineer of the year Award 2020 -- Dr. A P Shashikala

Dr A.P. Shashikala has been conferred the prestigious 'Outstanding Woman Structural Engineer of The Year' as a part of 'IAStructE National Awards-2020' which were patronized by 'Indian Association of Structural Engineers'.

Having completed her graduation (B.Tech. in civil engineering) and post-graduation (M.Sc. in Civil (structural engg.)) from University of Calicut, Dr A. P Shashikala went on to pursue her doctoral degree in offshore structures from IIT Madras. She started her professional career as a graduate design engineer at Kochi and later on joined NIT Calicut as a faculty in civil engineering department. During her inspiring 37 years at NITC, she graced the roles of lecture, Asst. Professor, Professor and Professor (HAG), where she has guided 10 PhD scholars. 115 M.Tech projects and 70 B.Tech Projects.

Department of Civil Engineering along with the rest of NIT Calicut continues to feel privileged for the presence of a pioneer such as Dr A.P. Shashikala amidst them.

ARTICLES

Roadways & Transportation Infrastructure

-- Muhammed Ashif

Roadways and transportation infrastructure, by covering a considerable part of urban and rural areas, can potentially be energy harvesting sources. The kinetic energy from passing vehicles is an excellent example of unused ambient energy. Therefore, they have great potential for future sustainable energy sources.

A prototype of an electromagnetic speed bump energy harvester (ESE) is developed in this study to harvest energy from passing vehicles' kinetic energy while also controlling vehicle speed. The ESE absorbs the deflection caused by a passing car and converts it to a rotating shaft that activates an embedded generator. Several tests were conducted to simulate traffic conditions and assess the prototype's ability to generate electrical power. The effect of load magnitude, loading time, unloading time, and the loading time to unloading time ratio on the power output generated by the ESE was investigated in these tests.

The experimental results showed a maximum average power of 3.21 mW, indicating that the proposed prototype has the potential to generate significant power under actual traffic loading

The objective of this study was to develop an electromagnetic speed bump energy harvester (ESE) prototype powered by the kinetic energy of a passing vehicle. This paper presents the procedure of designing and modeling an ESE prototype and the evaluation of its performance in generating electrical power under simulated traffic conditions in the laboratory. The effect of the material properties on the mechanical response of the ESE was determined by conducting finite element analysis on an ESE model. The proposed energy harvesting prototype is intended to work as a speed bump to control speed, promote safety, and supply power for a a roadway's infrastructure.

ARTICLES

An electromagnetic-based prototype for harvesting energy generated by passing vehicles from large deflections in speed bumps has been proposed in this paper. The performance of the ESE in the experimental lab test shows strong potential for the technology to become a source of sustainable energy for the operation of roadway infrastructure. Numerical analysis using FE was used to determine the optimum material for the top plate of the prototype. The results showed that lower deflections are obtained by metals—among which steel showed the least deformation. It was also determined that making the upper plate out of plastic rubber does not contribute to stress reduction and will impose higher concentrated stress demands at the connections. However, all four prototype models have an acceptable performance rate based on values of stress and deflection. Load (kN) 234 Loading—cycle of loading and unloading specification 0.5–1.5 s 1.35 1.18 1.05 0.7–1.5 s 2.11 1.98 1.68 1–1.5 s 3.21 3.19 1.57 0.5–2 s 0.77 0.70 0.58 0.7–2.0 s 1.15 1.20 0.84 1–2 s 1.71 1.96 1.13 Fig. 11. Comparison between (a) conventional speed bump and prototype installed in pavement structure versus (b) unloaded and (c) under wheel loading. M. Gholikhani, et al. Applied Energy 250 (2019) 503–511 510 connection between the bump and the springs must be properly considered in the design. Lab tests on the ESE were conducted to evaluate its power-generating performance under different conditions of loading. According to the results, the average output of the prototype is 3 mW over each axle passage. The output values of the ESE are low at this stage of the development. However, by adding some additional components, such as a gearbox and amplifying rotations, the output is expected to increase significantly. The results also indicated that the output magnitude is related to the speed of top plate displacement, which is directly proportional to the speed of the passing vehicle. Further studies are needed to examine the prototype performance under real traffic loads and account for other potential factors contributing to output power including effect of bump size, stiffness of compressions springs, and size of generator. Also, the design and implementation of the ESE should be studied to analyze and mitigate its negative effect on the pavement around it because implementation could impact the pavement structure and cause distress.