Newsletter for March 2026
Department of Mechanical Engineering
Dayananda Sagar University
Bengaluru-562112


Dr. Shashidhar L C


Prof. Abhishek M

The Department of Mechanical Engineering, School of Engineering, DSU, on 6 March 2026 conducted an **industrial visit to M/s. Kamath Plastics Private Limited**, a well-established company engaged in injection molding and mold manufacturing.

Dr. Shashidhar L C, and Mr. Abhishek M (PhD), Assistant Professor, Department of Mechanical Engineering, led the program along with VI semester mechanical engineering students. The program was carefully selected to provide the students with hands-on exposure to plastic production processes and deepen their understanding of the technologies employed in the industry.

The faculty delivered concept-driven instruction complemented by the industry's problem-solving approach, enabling participants to gain practical exposure to real-world plastic molding processes and industrial workflows. This interactive approach helped VI semester Mechanical Engineering students enhance their technical competence and industry readiness, while also strengthening collaborative engagement.


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Google


Dr. Sravanabavan D


Dr. Shashidhar L C


Prof. Abhijith N

The Department of Mechanical Engineering at Dayananda Sagar University organized the "**Autodesk Fusion Insider Build Testing**" **Design Competition 2026** in association with Autodesk India. The event was conducted from 28th to 31st March 2026 at the university's main campus in Bengaluru under the guidance of convenor Dr. Saravanabavan D. Faculty coordinators Dr. Shashidhar L C played a key role along with Prof. Abhijith N in organizing the event. The Autodesk team, including Mr. Sujay, Mr. Vinayak, and Mr. Praise, provided expert guidance to participants. Student coordinators Mr. Darshan, Mr. Akshay, and Mr. Dinesh supported the smooth execution of the competition. It began with an expert briefing session by Autodesk professionals, introducing participants to advanced tools in Autodesk Fusion 360. Students then engaged in a three-day design challenge focused on next-generation aerospace component design and innovation. Participants created and submitted their designs remotely using Autodesk Fusion 360 software.

The competition encouraged creativity, technical skills, and real-world problem-solving among engineering students. Top designs were felicitated, and all participants received certificates, making the event a valuable hands-on learning experience.


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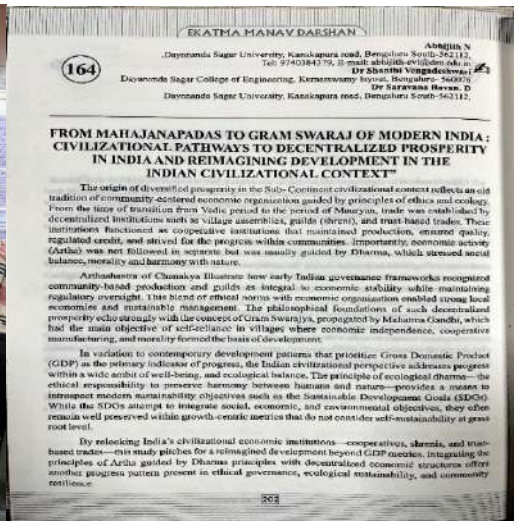
Prof. Abhijith N

Abhijith N, Assistant Professor-ME department, DSU-SoE, presented Paper titled- " ***From Mahajanapadas to Gram swaraj of Modern India: Civilizational pathways to Decentralized Prosperity in India and Reimagining***" in the International conference themed "Ekatma Manav Darshan – Bharat's Worldview." It was held from 25–27 March 2026 at Karnataka State Open University, Mysuru. A certificate was awarded to recognize participation and presentation at this international academic conference. It is awarded to Abhijith N for presenting the above research paper.



EKATMA MANAV DARSHAN

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Abhijith N
,Dayananda Sagar University, Kanakapura road, Bengaluru South-562112.
Dr Shanthi Vengadeshwar,
Dayananda Sagar College of Engineering, Kumaraswamy layout, Bengaluru- 560078
Dr Saravana Bavan. D
Dayananda Sagar University, Kanakapura road, Bengaluru South-562112.

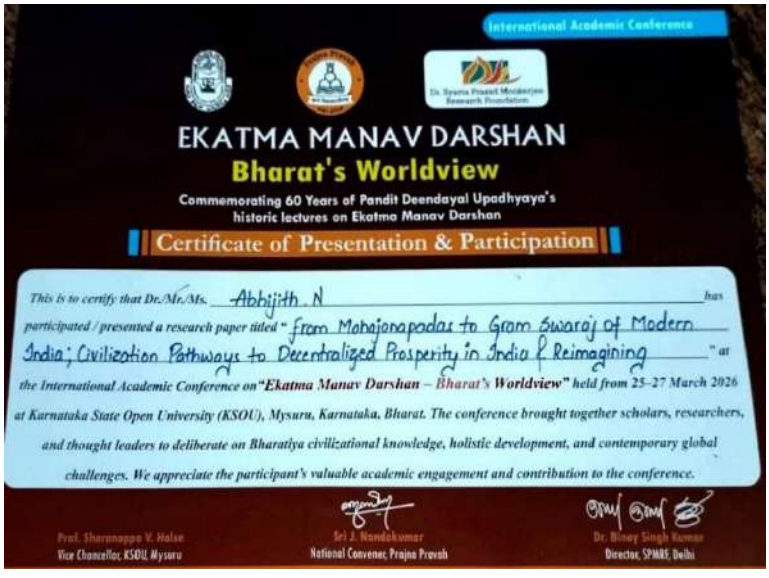
FROM MAHAJANAPADAS TO GRAM SWARAJ OF MODERN INDIA : CIVILIZATIONAL PATHWAYS TO DECENTRALIZED PROSPERITY IN INDIA AND REIMAGINING DEVELOPMENT IN THE INDIAN CIVILIZATIONAL CONTEXT"

The origin of diversified prosperity in the Sub-Continent civilizational context reflects an old tradition of community-centered economic organization guided by principles of ethics and ecology. From the time of transition from Vedic period to the period of Mauryan, trade was established by decentralized institutions such as village assemblies, guilds (shreni), and trust-based trades. These institutions functioned as cooperative institutions that maintained production, ensured quality, regulated credit, and strived for the progress within communities. Importantly, economic activity (Artha) was not followed in separate but was usually guided by Dharma, which stressed social balance, morality and harmony with nature.

Arthashastra of Chanakya illustrate how early Indian governance frameworks recognized community-based production and guilds as integral to economic stability while maintaining regulatory oversight. This blend of ethical norms with economic organization enabled strong local economies and sustainable management. The philosophical foundations of such decentralized prosperity echo strongly with the concept of Gram Swarajya, propagated by Mahatma Gandhi, which had the main objective of self-reliance in villages where economic independence, cooperative manufacturing, and morality formed the basis of development.

In variation to contemporary development patterns that prioritize Gross Domestic Product (GDP) as the primary indicator of progress, the Indian civilizational perspective addresses progress within a wide ambit of well-being, and ecological balance. The principle of ecological dharma— the ethical responsibility to preserve harmony between humans and nature—provides a means to introspect modern sustainability objectives such as the Sustainable Development Goals (SDGs). While the SDGs attempt to integrate social, economic, and environmental objectives, they often remain well preserved within growth-centric metrics that do not consider self-sustainability at grass root level.

By relocating India's civilizational economic institutions —cooperatives, shrenis, and trust-based trades—this study pitches for a reimagined development beyond GDP metrics. Integrating the principles of Artha guided by Dharma principles with decentralized economic structures offers another progress pattern present in ethical governance, ecological sustainability, and community resilience



Dr. Ravitej Y P

Dr. Ravitej Y P, Mechanical Engineering Department, Dayananda Sagar University published a research paper entitled "Tribological and Predictive Modelling Analysis of Copper–CNT–Titanium Hybrid Metal Matrix Composites" in "journal of bio-and Tribo corrosion" 6th March 2026. The paper investigates wear behavior, friction characteristics, and material performance using advanced analytical techniques. The study highlights the role of reinforcement synergy in enhancing durability, offering valuable insights for high-performance engineering applications such as aerospace and automotive components.

Home > Journal of Bio- and Tribo-Corrosion > Article

Tribological and Predictive Modelling Analysis of Copper – CNT – Titanium Hybrid Metal Matrix Composites

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Sripad Kulkarni, Mallikarjun Biradar, S. Ramesh, R. PremChand, S. P. Shanmuganatan, Yuvaraja Naik, Mahadeva Prasad, Y. P. Ravitej, N. Subramani, K. Srikumar, Arun Kumar, V. Sreemathy & Rekha Shivaram

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Dr. Rahul Kumar

Dr. Rahul Kumar, Associate Professor, Department of Mechanical Engineering has published a research article in the Australian Journal of Mechanical Engineering, a **Q2-ranked, Web of Science (ESCI, IF- 1.5) Indexed international journa**l. The published research addresses contemporary challenges in mechanical and sustainable engineering and presented innovative methodologies and analytical insights aligned with UN's Sustainable Development Goals—SDG 12 (Responsible Production and Consumption). This achievement reflects the faculty member's commitment to high-quality research and continuous contribution to the university research ecosystem.

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Cartesian complex fuzzy-based ExpTODIM method: a machine learning–fuzzy decision framework for sustainable PALF-based composites

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ABSTRACT

The transition toward sustainable materials (SDG12) in the automotive sector necessitates data-driven frameworks. This study proposes a novel hybrid decision-making Exponential TOmada de Decisão Interativa Multicritério (ExpTODIM) framework, to evaluate and rank PALF-based hybrid polymer composites intended for automotive interior door panel applications. The framework integrates Random Forest Regression (RFR) with the Exponential TODIM (ExpTODIM) method under Cartesian form of Complex Fuzzy Decision Weighted Averaging (CFDWA) and Geometric (CFDWG) aggregation schemes. RFR is employed to derive objective, data-driven weights by quantifying the relative importance of nine key mechanical parameters, including tensile strength, flexural modulus, fracture toughness, and impact resistance. Fracture energy (0.11155449), Young's modulus (0.111533456), and Flexural strength (0.111535261) emerged as the most influential criteria, indicating their strong contribution to overall composite performance. These weights are subsequently used within the ExpTODIM model. Results indicate that the composite fabricated with 0–1 mm/min (0 wt% filler) achieved the highest prospect value (1.00), exhibiting superior tensile and fracture properties essential for stiffness and energy absorption in automotive applications. Comparative sensitivity analyses across criteria weights, attenuation factor (λ), and dominance sensitivity (s) confirmed the robustness of the proposed framework, with RFR–ExpTODIM–CFDWA revealed to be superior compared to with RFR–ExpTODIM–CFDWG.

ARTICLE HISTORY
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KEYWORDS
Random Forest Regression (RFR); Exponential TODIM (ExpTODIM); complex fuzzy decision weighted averaging (CFDWA); complex fuzzy decision weighted geometric (CFDWG); natural fibre composites; TODIM; automotive door panels

1. Introduction

The advancement of sustainable composite materials has become a central focus in modern engineering design, particularly within the automotive sector, which continuously seeks innovative solutions to improve performance, reduce environmental impact, and enhance energy efficiency. Moving towards the utilisation of natural fibrous filler reinforced polymer composites, the automotive industry now recognises their potential as viable substitutes for synthetic composites in interior components such as door panels and dashboard substrates (Kumar and Bhowmik, 2021). This transition is driven by the dual objectives of achieving lightweight structural efficiency and environmental sustainability, two essential attributes for next-generation vehicle design.

While traditional glass fibre–reinforced composites have long dominated the field due to their high strength and stiffness, their non-biodegradability, high energy processing demands, and limited recyclability have encouraged a shift toward bio-based reinforcements. Among the natural fibres, Pineapple Leaf Fibre (PALF) stands out as an attractive candidate due to its high specific strength, renewability, low cost, and biodegradability. PALF-reinforced composites offer a compelling balance between mechanical performance and sustainability, making them promise for interior automotive applications that demand structural resilience and ecological compatibility.

However, selection of material with optimum composition for the intended application requires balancing conflicting performance parameters such as flexural strength, fracture toughness, and impact resistance, alongside density, cost, and environmental considerations. The optimisation of these mechanical characteristics is non-trivial because enhancing one property often leads to compromises in another, necessitating a systematic decision-support mechanism to evaluate and rank alternative material configurations effectively.

In recent years, extensive research has been devoted to developing and optimising natural fibre-reinforced polymer composites (NFCs) as viable, sustainable alternatives to synthetic composites. Their renewable nature, biodegradability, low cost, and lightweight characteristics have positioned them as promising materials for various structural and semi-structural applications. However, achieving an optimal balance

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Dr. Naseem Khayum

Dr. Naseem Khayum, Assistant Professor in the Department of Mechanical Engineering , has secured a funded project of Rs. 9 lakh under the Indian Knowledge Systems (IKS) Division, Ministry of Education, Government of India , through the BG Samvahan Karyakram.

45	Samvahan-Yantra: Documentation and Functional Reconstruction of Yantras Described in Classical Indian Engineering Texts	Naseem Khayum	Dayananda Sagar University

Dr. Naseem Khayum

Dr. Naseem Khayum, Assistant Professor from the Department of Mechanical Engineering, has published a research article titled **"Effect of baffle number on thermal and hydraulic performance of a helical solar air heater"** in the prestigious international journal **Solar Energy (Elsevier)**. *Solar Energy* is an **SCI-indexed, Q1-ranked journal with an Impact Factor of 6.6**, and is widely recognized in the field of renewable and solar energy research.

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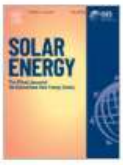

Effect of baffle number on thermal and hydraulic performance of a helical solar air heater

Walid Ben Amara [a], Abdallah Bouabidi [a b], Ali M. Ashour [c], Yassine Cherif [d], Rami Belguith [d], Naseem Khayum [e]

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