IJEAST

INTERNATIONAL JOURNAL
OF ENGINEERING APPLIED SCIENCE
AND TECHNOLOGY

VOLUME : 8 ISSUE : 11 Print / Issue Publication Date: 30-Apr-2024

ISSN : 2455-2143

Indexed In

Google SCHOLAR OPEN ACCESS doi Crossref

WWW.IJEAST.COM

editor@ijeast.com

International Journal of Engineering Applied Sciences and Technology, 2024
Vol. 8, Issue 11, ISSN No. 2455-2143, Pages 216-221
Published Online March 2024 in IJEAST (http://www.ijeast.com)

A REVI EW PAPER ON MODELLING OF TWO-WHEELER CHASSIS

Dr. S. Sreenatha Reddy
Professor & Principal
Guru Nanak Institute of Technology, Khanapur, India.

B. Rakesh, A. Roshan Reddy, G. Shilpika, Shiga Sravanthi
UG Scholars,
Dept. Of Mechanical Engineering,
Guru Nanak Institute of Technology, Khanapur, India.

Abstract— **The chassis frame forms the skeleton of the car. The car chassis is the main transportation system of the vehicle. Motorcycle chassis consists of frame, suspension system, wheels and brakes. A common material for motorcycle chassis is steel. The use of steel makes the chassis frame heavier and increases the overall weight of the car. Weight reduction is an important issue in today's automotive industry because it has a significant impact on vehicle fuel consumption. Composite materials offer an excellent solution to this problem.**

Keywords— **Chassis Frame, Two-Wheeler, Composite Materials, Weight Reduction.**

I. LITERATURE SURVEY

Mr. Inzamam Mulla [1] The chassis is the foundational structure of a vehicle, crucial for carrying loads and supporting various components such as the gearbox and engine. In two-wheelers, the chassis includes the frame, suspension, wheels, and brakes, and significantly influences the vehicle's style. Typically made from steel, which is dense and heavy, there are alternative materials like aluminum alloys, titanium, carbon fibre, and magnesium that offer lighter weight and high strength, making them suitable for chassis construction. The frame, mainly composed of hollow tubes, acts as a skeleton to which parts like the fuel tank and engine are attached.

Goutham Diwan [2] 3D Printing, or Additive Manufacturing, is an innovative method that creates parts directly from digital models by adding material layer by layer. This tool-less approach allows for the production of fully dense metallic parts quickly and with high precision. Additive manufacturing offers benefits such as design freedom, the ability to create complex parts, and the potential for lighter components. For two-wheelers, the frame is crucial as it bears the vehicle's load and must withstand shocks, twists, vibrations, and other stresses. Stainless steel is a material choice for printing these chassis. The design process of a two-wheeler chassis is carried out using CATIA V5 software, and the actual manufacturing is done through the Electron Beam Additive Manufacturing (EBAM) method.

Ajith Arul Daniel [3] The project's goal is to develop a powerful vehicle optimized for both on and off-road performance, featuring a streamlined design for high fuel efficiency and a compact structure to address parking constraints, all at an affordable price. The team aims to create a unique, affordable, lightweight, and modular vehicle suitable for transporting individuals and light cargo across varied terrains. The vehicle's frame, responsible for bearing the total load, underwent design modifications and analysis using CATIA Software, leading to an optimized design that was then fabricated and tested for performance.

Prakash Katdare [4] This paper focuses on the design and weight optimization of a two-wheeler chassis frame, which is crucial for vehicle support and performance. The chassis acts as the vehicle's backbone, holding essential components such as the gearbox and engine. Typically made of dense steel, the pursuit of weight reduction without sacrificing strength has led to consideration of lighter materials like aluminum alloys, titanium, carbon fiber, and magnesium. Through analyzing both static and dynamic loading conditions, the paper presents a method for reducing the chassis's weight by utilizing these alternative materials, thereby optimizing the design for enhanced performance and efficiency.

Abhijeet R. Raut [5] This paper explores the critical issue of weight reduction in automotive design, particularly focusing on two-wheeler chassis which are traditionally made from steel, contributing to the vehicle's overall heaviness and impacting fuel efficiency. The document reviews various studies and investigations into the design and analysis of automotive parts, highlighting the application of composite materials as an effective solution for reducing weight while maintaining, or even enhancing, vehicle performance and efficiency. The emphasis is on leveraging the benefits of composite materials to address the challenges posed by heavier traditional materials like steel in the construction of two-wheeler chassis frames.

Kishore H [6] The traditional internal combustion engine, once favored for its economic viability during times of cheap and abundant oil, faces criticism due to its environmental impact, including significant contributions to air pollution and greenhouse gas emissions. The burning of fossil fuels by these engines releases not only carbon dioxide but also harmful chemicals like nitrogen oxides (NOx), sulfur oxides (SOx), and carbon monoxide. Recognizing the dual challenges of reducing both carbon emissions and dangerous pollutants, the automotive industry has sought solutions within the framework of petrol and diesel engines. Innovations such as turbochargers aim to enhance fuel efficiency, catalytic converters to mitigate harmful gas emissions, and advanced drivetrain technologies to minimize energy loss, are among the efforts made to address these issues without abandoning traditional engine designs.

Saurabh Rege [7] This study focuses on designing a motorcycle frame for a two-seater, electric two-wheeler, emphasizing strength, safety, and optimal performance. It adopts a two-step approach: firstly, modeling the frame based on structural and ergonomic requirements, influenced by design constraints from the suspension, steering, and transmission systems, alongside determining the loads on the frame. The second step involves conducting stress analysis through finite element analysis software, followed by design adjustments aimed at reducing weight while preserving the frame's structural integrity.

Mr. Arvind Mande [8] Forklifts are essential transportation tools in various industries, ranging from heavy-duty trucks to narrow aisle vehicles. Despite their widespread use, there is room for improvement to enhance their performance. Segway, a self-balancing device with two wheels, offers inspiration for innovation in forklift design. Essentially, a forklift is a machine designed to lift heavy loads, which would be challenging for an individual to lift manually. Unlike typical vehicles, forklifts are equipped with forks for lifting heavy materials effortlessly at the push of a button.

AMARESH KUMAR D [9] This paper focuses on the critical role of suspension systems in enhancing the safety and ride quality of two-wheelers, particularly in the context of India's often challenging road conditions. Using a finite element approach, the analysis primarily centers on mono suspension springs. The study aims to achieve optimal safety and ride control by effectively managing shock waves and dissipating kinetic energy. Three suspension concepts were developed and compared against existing systems used in two-wheelers. Initially, a single helical spring design was considered, followed by advancements incorporating hydraulic damping and gas damping systems. The goal was to achieve a damping ratio of 0.8 for the mono suspension system. Through detailed analysis, the combination of spring, hydraulic, and gas accumulator design proved most effective, achieving the desired damping ratio. Response curves were plotted against dynamic loads, with varying loads of 200 kg, 250 kg, and 300 kg examined to assess performance across different conditions.

Roshan David Sounderaraj.P [10] This study underscores the growing significance of composite materials in modern manufacturing, particularly in applications where lightweight yet robust materials are crucial. Fiber-reinforced polymer composites, renowned for their high strength-to-weight ratio and exceptional properties such as durability, stiffness, damping, and resistance to various elements, have seen increasing adoption across diverse sectors including aerospace, automotive, and marine industries. In the context of electric motorcycles, which are gaining popularity due to their eco-friendliness and cost-effectiveness, the study focuses on optimizing the frame design for static and vibration analyses. The project aims to assess the feasibility of using composite materials, including sugarcane-reinforced composites, in place of traditional steel for electric bike frames. Through static and vibrational analysis, the study evaluates the performance and safety of various frame designs, comparing them to existing materials. Ultimately, the research aims to identify the most suitable material composition for electric bike frames, considering factors such as weight, strength, safety, and cost-effectiveness.

Mr. A C RAMANJANEYULU [11] This research focuses on the crucial role of the chassis frame in providing structural support and carrying loads for two-wheeler vehicles. The chassis serves as the main framework upon which essential components like the engine and transmission are mounted. In addition to the frame, the chassis comprises suspension, wheels, and brakes, significantly influencing the overall style of the two-wheeler. While steel is commonly used for its density and weight-bearing capacity, alternative materials such as aluminium alloys, titanium, carbon fiber, and magnesium offer lighter weight and high strength properties. The study involves modeling the two-wheeler chassis frame using CATIA V5 software and conducting structural analysis using ANSYS software, aiming to optimize the design for performance and safety.

Bibhuti Biswal [12] This paper addresses the growing need for environmentally friendly transportation solutions in India, given its significant population and the dominance of the two-wheeler market. With rising fuel costs, there is a shift towards electric vehicles (EVs), which offer numerous benefits such as cost-effectiveness, low maintenance, pollution reduction, noise reduction, and a smoother driving experience. Electric scooters emerge as a viable alternative to traditional petrol-powered bikes, promising substantial growth potential for the Indian EV industry by 2030. The paper focuses on the design and development of an electric scooter, with emphasis on the chassis as the structural foundation of the vehicle. Structural steel is chosen as the material for its combination of strength and lightweight properties. The project aims to create a lightweight battery-operated E-Scooter equipped with a BLDC hub motor transmission system, capable of carrying loads up to 100 kg and achieving speeds of 60 kmph.

C. H. Neeraja a C. R. Sireesha and D. Jawaharlal [13] The suspension frame for a two-wheeler has been meticulously modeled using Pro/Engineer, and structural and modal analyses have been conducted using four different materials: Steel, Aluminum Alloy A360, Magnesium, and Carbon Fiber Reinforced Polymer (CFRP). Through these analyses, it has been confirmed that the stress values for all materials remain below their respective permissible yield stress levels, indicating the safety of the design. However, upon comparison of the results across the four materials, it was noted that stress levels were consistent while displacement was notably lower for the carbon fiber reinforced polymer. Consequently, based on this analysis, CFRP emerges as the optimal material choice for the suspension frame design, offering superior performance characteristics compared to the other materials tested.

K. Sivaramakrishnan [14] The design and weight optimization of a two-wheeler chassis frame, emphasizing its critical role in ensuring the vehicle's structural integrity and load-carrying capacity under all operating conditions. The chassis, acting as the vehicle's skeleton, supports major components such as the gearbox and engine, and significantly influences the two-wheeler's style. Traditionally, steel has been the material of choice for chassis due to its strength and density. However, this study investigates alternative materials like aluminium alloys, titanium, carbon fiber, and magnesium, which offer the benefits of reduced weight and maintained or enhanced strength. Through static loading analyses, the research aims to improve the chassis's mechanical behavior by utilizing these lighter materials. The design and analysis processes are facilitated by CATIA V5 and ANSYS software, respectively, focusing on geometry characteristics, meshing, and loading conditions, with the geometry import following the IGS file format. This approach seeks to optimize the chassis design for better performance and efficiency.

Sharanagouda Hadimani [15] This project delves into the design and analysis of two-wheeler frames, exploring four materials—alloy steel, aluminium alloy A360, magnesium, and carbon fiber reinforced polymer—to determine the optimal choice for frame construction. Unlike previous studies focused mainly on static load optimization, this study incorporates shock analysis simulating three bumps per second, based on standard road tests, to closely mimic real-world conditions. Using NX-CAD for modeling and ANSYS for analysis, the research aims to address manufacturers' interest in lightweight frames while navigating constraints such as weight and stiffness. The study underscores the importance of design optimization and advanced materials in achieving weight reduction without compromising the frame's stiffness. Given the complex loading conditions and geometrical intricacies of two-wheeler frames, a powerful numerical approach is employed for thorough analysis. The frame's design must ensure torsion resistance to prevent buckling and distortion from uneven road surfaces, safeguarding the mounted components like the gearbox and engine.

Djoko Setyanto [16] this paper presents a methodology for creating a Finite Element (FE) model to simulate and evaluate a new motorcycle frame design, offering a cost-effective alternative to experimental testing in Indonesia's automotive industry. The process begins with designing a 3D solid model of the frame using Catia V5R25 software, followed by constructing an actual prototype from STAM 390 pipe, welded using a DR4000 robot and MIG welding. The model is then refined with geometries from a 3D scan of the prototype and assumed bead welding at joints. Meshing is done via Sim-Designer 2017, and Nastran 2014 SOL 103 conducts Finite Element Analysis (FEA) to assess the frame's dynamic characteristics. Experimental Modal Analysis (EMA) of the prototype, involving an impact hammer test, validates the FE model by comparing frequency response functions. This analysis under simulated real-world constraints reveals the frame's first natural frequency at 3 Hz, indicating resonance conditions for safety analysis. This process outlines an efficient approach for designing and testing new motorcycle frames.

Mr. Dham Rushikesh [17] this project aims to explore methods for streamlining chassis design calculations and models, making them more iterative and user-friendly during the design process. It seeks to recommend how finite element analysis (FEA) should be utilized in designing chassis frames, highlighting the necessity for continuous improvement and innovation in design methodologies. Recognizing the limitations of current processes, the project emphasizes the exploration of new materials that could surpass traditional ones in performance and benefits. It incorporates findings from previous research as well as original simulation work to test and validate more advantageous design processes.

Mr. Inzamam Mulla [18] This project focuses on designing and optimizing the weight of a two-wheeler chassis frame, which is crucial for the vehicle's structural integrity and overall performance. The chassis, acting as the vehicle's skeleton, supports key components like the gearbox and engine. Traditionally made from dense steel, the project explores alternative materials such as aluminum alloys, titanium, carbon fiber, and magnesium, which offer the benefits of being lighter yet strong. To enhance the design, the project considers modifications in geometry, particularly the thickness of the hollow tubes making up the frame. The aim is to select the best material that ensures strength while achieving weight reduction. The design process involves creating a 3D model of the chassis using suitable software and analyzing its structural behavior under various loading conditions through Ansys Workbench R16, to ensure the chassis's structural stability is maintained alongside the optimizations.

Naresh Kumar KONADA [19] In this study, the performance of an electric two-wheeler bike frame made from various materials, including Aluminum alloy, Titanium alloy,

grey cast iron, Carbon fiber epoxy, Structural steel, and compared with AISI-1020, was analyzed using SolidWorks and Ansys. The analysis involved static tests with a 1500 N load and impact tests at a velocity of 27.7 m/s. The results showed that Carbon Fiber Epoxy (CF-E) had the highest stress resistance and the lowest deformation in static analysis, and also performed well in impact analysis, demonstrating stress resistance close to AISI 1020 and structural steel, with minimal deformation. This suggests CF-E as a superior material for e-bike frames in terms of strength and deformation resistance.

S.H. Chaudhari [20] this paper delves into the analysis of motorcycle frame structures, focusing on destructive testing methodologies to assess their strength and performance. It highlights the importance of the frame in supporting the vehicle's load and withstanding various stresses such as shock, twist, and vibration. The paper discusses the different types of motorcycle frames, categorized based on construction and application, and emphasizes the significance of choosing the appropriate frame design to meet performance requirements. It also touches upon the structural properties of frames, including natural frequency, damping, and mode shapes, which can be evaluated through experimental modal analysis. The paper underscores the importance of mounting the engine with rigidity to achieve a well-balanced chassis, resulting in responsive handling and stability during vehicle operation.

Santosh Hiremath [21] this study focuses on assessing the structural integrity and dynamic characteristics of two-wheeler chassis, specifically the Pulsar 150cc and Passion models, through experimental modal analysis (EMA) and finite element method (FEM). The objective is to determine natural frequencies, damping, and mode shapes to understand the behavior of the chassis under various loading conditions. EMA helps identify inherent structural properties like natural frequencies and mode shapes, crucial for understanding how the chassis responds to vibrations. The ultimate goal is to minimize the adverse effects of vibrations, which are inevitable but can be managed through proper analysis and design considerations. FEM is utilized to complement EMA results and provide a comprehensive understanding of the dynamic behavior of the chassis.

Umesh Kaur [22] this project aims to address environmental concerns and limited conventional resources by transitioning towards electric vehicles, specifically electric motorcycles. Recognizing the significant contribution of automobiles to pollution, the project focuses on the chassis—the backbone of the motorcycle. It entails studying various types of frames, their structures, and materials such as carbon steel, aluminum, and carbon fiber, along with their properties. The project's initial stage involves conducting structural analysis, modal analysis, and impact analysis using CAE software under different loading conditions. Through this comprehensive approach, the project seeks to develop an efficient and environmentally friendly electric motorcycle chassis.

Gaurav Vasantrao Bhunte [23] the paper provides a comprehensive review of analysis techniques employed for evaluating automobile frames, focusing on both static and dynamic analyses. It discusses various analytical and experimental methods utilized in this context, as reported in existing literature. The aim is to present an overview of these techniques to facilitate further research on chassis analysis, ultimately contributing to a better understanding and advancement in this field.

M Pradeep Kumar [24] the paper discusses the design and optimization of a chassis for a two-wheeler electric vehicle to achieve a high strength-to-weight ratio. The chassis design process involved drafting a line diagram based on vehicle requirements using Solidworks16 and constructing it with tubes. Design parameters such as tube thickness, outer diameter, and material yield strength were optimized using the Taguchi method. ANSYS software was used for static structural analysis to determine the chassis strength, with the factor of safety as the measure. Taguchi design of experiments in Mini Tab software helped optimize the design parameters, considering signal-to-noise ratio. The results guided the selection of optimal design parameters, leading to a chassis with an enhanced strength-to-weight ratio.

O Kurdi, R Abd- Rahman, M N Tamin [25] works on the, Stress Analysis of Heavy-Duty Truck Chassis Using Finite Element Method, he mainly focusses on the important steps in development of a new truck chassis is the prediction of fatigue life span and durability loading of the chassis frame. Fatigue study and life prediction on the chassis is necessary in order to verify the safety of this chassis during its operation. Stress analysis using Finite Element Method (FEM) can be used to locate the critical point which has the highest stress. This critical point is one of the factors that may cause the fatigue failure.

II. CONCLUSION

The future of motorcycle chassis production holds significant promise with the advent of metal 3D printing technology. Its advantages over traditional machining processes, such as reduced waste and increased design flexibility, make it an attractive option for manufacturers. This environmentally friendly approach not only minimizes material wastage but also offers commercial profitability. By leveraging 3D printing, companies can optimize their manufacturing processes, experiment with various materials, and customize chassis dimensions to meet diverse requirements. As a result, metal 3D printing is poised to revolutionize the production of two-wheeled chassis, offering both sustainability and profitability in the automotive industry's future landscape.

IV.ACKNOWLEDGEMENT

We owe our immense thanks to **Dr. S. SREENATHA REDDY** our project guide Professor & Principal and Management Guru Nanak Institute of Technology for the

sustained interest, constructive criticism, and constant encouragement at every stage of this Endeavour.

We extend our deep sense of graduate to **Dr. B. VIJAYA KUMAR**, Professor & Head of the Mechanical Department for his masterly supervision and valuable suggestions for the successful completion of our project.

We wish to express our candid gratitude to **Dr. S. SREENATHA REDDY**, Principal and the management of the Guru Nanak Institute of Technology for providing us the best amenities which enabled us to complete our project in the stipulated time.

Finally, yet importantly, we are very thankful to our parents, friends, and other faculty of Mechanical Engineering department for their constant support in completion of this project.

V. REFERENCE

[1]. Manoj Jaya Prakash Swain Prof. Amit Kumar "Exploration of Composite Material Chassis Frame Design and analysis" Protagonist International Journal of Management and Technology (PIJMT) Vol 2 No 3 (May-2015) ISSN- 2394- 3742.

[2]. M. Kunieda, B. Lauwers, K.P. Rajurkar, B.M Schumacher, 2005, Advancing EDM through Fundamental Insight into the Process, CIRP Annals - Manufacturing Technology, vol. 54 (2), pg. 64-87.

[3]. Derek Covilla*, Steven Begga, Eddy Eltona, Mark Milnea, Richard Morrisa, Tim Katza "Parametric finite element analysis of bicycle frame geometries" The 2014 conference of the International Sports Engineering Association.

[4]. Tony Foale, "Motorcycle Handling and Chassis Design – the art and science", I edition, Cycle World Magazine, Spain, 2002.

[5]. Gourav Gupta, Ankur Kumar, Rahul Tyagi, Sachin Kumar" Application and Future of Composite Materials" International Journal of Innovative Research in Science, Engineering and Technology. Vol. 5, Issue 5, May 2016. ISSN (Online): 2319-8753.

[6]. "Design of Hybrid Electric Vehicle" -TOSHALY MOHANADI, Department of Electrical Engineering National Institute of Technology Rourkela-769008 (Odisha) May-2013.

[7]. The Finite Element Method for Solids and Structural Mechanics, Zienkiewicz, Taylor, Fox, Elsevier, Seventh Edition 2014.

[8]. S S Rattan (2009), Theory of Machines, Professor of Mechanical Engineering, National Institute of Technology, Kurukshetra.

[9]. Prof. D K Chavan, Sachin V Margaje, Priyanka A Chinchorkar, "Suspension in Bikes Considering Preload, Damping Parameters and Employment of Mono Suspension in Recent Bikes "International Journal of Engineering Trends and Technology- Volume4Issue2- 2013.

[10]. Manishaben Jaiswal, "VIRUS ORIGIN AND EVALUATION WITH DATA ANALYTICS", International Journal of Creative Research Thoughts (IJCRT), ISSN:2320-2882, Volume.9, Issue 3, pp.6270-6280, March 2021, Available at: http://www.ijcrt.org/papers/IJCRT210.

[11]. Raut, Abhijeet R., and A. D. Shirbhate. "Design and Analysis of Two-Wheeler Composite Chassis Frame a Review." (2017).

[12]. Prof. Mahesh S. Khande, Mr. Akshay S. Patil, Mr. Gaurav C. Andhale, Mr. Rohan S. Shirsat, "Design and Development of Electric scooter", International Research Journal of Engineering and Technology (IRJET), 2020.

[13]. CH.Neeraja, C.R.Sireesha and D. Jawaharlal, "Structural Analysis of Two-Wheeler Suspension Frame", International Journal of Engineering Reasearch & Technology,Vol.1 Issue 6,August - 2012.

[14]. Prakash katdare, S.C.Shilwant "design optimization of two-wheeler (bike) chassis" international engineering research journal (IERJ) special issue2 page 4273-4277, 2015, ISSN 2395-1621.

[15]. Material and Design Optimization for Aluminium Two-wheeler Frame by Forrest Dwyer, Adrian Shaw, Richard Tombarelli.

[16]. Rashid, H., Abdullah, A.H., Noh, M.H.M., Hamid, A.H.A., Abidin, N.M.Z., 2012, "Design of a superbike paddock stand using CAD and CAE tools", International Journal of Automotive and Mechanical Engineering, Vol. 5 (Jan-June), pp. 670-679.

[17]. Anurag, Amrendra Kumar Singh, Akash Tripathi, Aditya Pratap Tiwari, Nitish upadhyay, Design and Analysis of Chassis Frame, IJRE | Vol. 03 No. 04 | April 2016.

[18]. K. Venkatarao and J. Chandra Sekhar „„Design and Analisys of Heavy Vehicle Chassis by Using Composite Materials"" International journal and magazine of engineering, technology management and research. Volume no.2(2015). ISSN No.2348-4845.

[19]. Vignesh.M, Dr. Arumugam K, Vinoth.S, Hariharan.S "Design and Analysis of Frame of an Electric Bike" International Journal of Engineering Science Invention (IJESI) Vol-8 (2019) PP 08-16.

[20]. T. Kondaiah, D. Pavan Kumar," Shape and Material Optimization of a Two-Wheeler Front Suspension Frame for Pipe Type and Rectangular Cross Section", Internation Journal of Emerging Frends in Engineering Research, Volume 4, N0.6 , June 2016.

[21]. K. Santa Rao, G. Musalaiah and K. Mohana Krishna Chowdary," Finite Element Analysis of a Four-

Wheeler Automobile Car Chassis" Indian Journal of Science and Technology, Vol 9(2), January 2016.

[22]. Mr. Inzamam Mulla, Prof. A. M. Qureshi, "Design Analysis and Optimization of Two-Wheeler Chassis for Weight Reduction", International Research Journal of Engineering and Technology (IRJET), ISSN: 2395 0056, Volume: 06 Issue: 06 | June 2019.

[23]. CH.Neeraja, C.R.Sireesha and D. Jawaharlal, "Structural Analysis of Two-Wheeler Suspension Frame", International Journal of Engineering Reasearch & Technology,Vol.1 Issue 6,August - 2012.

[24]. W.T. Foster, Basic Taguchi design of experiments, National Association of Industrial Technology Conference, Pittsburgh, PA, 2000.

[25]. O Kurdi, R Abd- Rahman, M N Tamin, Faculty of Mechanical Engineering University Teknologi Malaysia 81310 UTM Skudai, Johor, Stress Analysis of Heavy-Duty Truck Chassis Using Finite Element Method.

IJEAST

INTERNATIONAL JOURNAL
OF ENGINEERING APPLIED SCIENCE
AND TECHNOLOGY

ABOUT IJEAST

International Journal of Engineering Applied Science and Technology (IJEAST) is a peer-reviewed, open access journal that publishes high-quality research papers in the field of Engineering, Applied Science and Technology.

IJEAST aims to provide a platform for researchers, academicians, and professionals to share their innovative ideas, research findings, and practical experiences with the global scientific community.

FOCUS AREAS

- Engineering
- Applied Science
- Technology
- Innovation & Development
- Interdisciplinary Studies

PEER REVIEWED
All submissions are rigorously peer reviewed to ensure quality.

OPEN ACCESS
Free and unrestricted access to research for all.

GLOBAL REACH
Connecting researchers and professionals worldwide.

TIMELY PUBLICATION
We ensure a swift and efficient publication process.

For more information, visit our website
www.ijeast.com

INTERNATIONAL JOURNAL
OF ENGINEERING APPLIED SCIENCE
AND TECHNOLOGY

editor@ijeast.com
www.ijeast.com
India

2455-2143