

TEAM GCOEA MOTORSPORTS ANNUAL REPORT 2023-24

Introduction

Team GCOEA MOTORSPORTS, representing the Government College of Engineering, Amravati, has been actively participating in the BAJA SAEINDIA competition since 2018. Initially competing with IC-engine ATVs, we transitioned to electric ATVs in 2022 to embrace the future of sustainable mobility. The 2023-24 season marks our second attempt with an electric ATV, and it has been a year filled with learning, growth, and remarkable achievements.

Participation Overview - BAJA SAEINDIA 2023-24

In this session, our team successfully participated in all three critical rounds of the competition, working tirelessly to improve our vehicle and performance. Below is a detailed summary of our journey:

1. Preliminary Round (July 2023)

Objective: Showcase the concept and feasibility of the electric ATV.

Key Activities:

Market survey conducted by the students to understand current trends and industry requirements.

Design of components and systems finalized for the ATV.

Presentation of detailed information about the vehicle to the judges.

Result: Achieved a score of 23.02 out of 40, laying a strong foundation for future rounds.

2. Virtual Round (1-3 December 2023)

Objective: Present the technical, financial, and marketing aspects of the ATV.

Key Events:

Cost Event: Detailed cost breakdown of the vehicle components and production.

Sales Event: Presentation of a business plan, including market analysis and sales projections.

Design Event: Technical design and innovative features of the ATV discussed in depth.

Virtual Dynamics Event: Our ATV was modeled and simulated on IPG software for two test tracks provided by BAJA:

Endurance Track: Tested the vehicle's reliability over long distances.

Manoeuvrability Track: Evaluated the handling capabilities under challenging turns.

Outcome: The team showcased thorough preparation, teamwork, and technical expertise during this phase. The team scored 103 marks out of 200.

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3. Physical Dynamics Round (6–9 March 2024 at BVRIT, Hyderabad)

Objective: Demonstrate the physical performance and safety of the electric ATV.

Technical Inspections (TI):

Mechanical TI: Cleared successfully, confirming the structural integrity and design of the vehicle.

Electrical TI: Passed smoothly, validating the safety and functionality of the electric systems.

Braking Test:

Despite nearing success, the ATV could not fully clear the braking test due to an unforeseen technical issue.

Design Challenge: Our team opted for smaller knuckles and a compact gearbox, which provided advantages in terms of weight but posed challenges in braking performance.

Learning: This experience provided valuable insights into areas of improvement for future iterations, particularly in balancing design trade-offs.

Achievements and Milestones

Successfully cleared both Mechanical and Electrical Technical Inspections – a significant achievement reflecting our engineering rigor and adherence to safety standards.

Participated in all three rounds of the competition and took our ATV to the Physical Dynamics event, demonstrating our team's perseverance and dedication.

Gained critical insights into design optimization, vehicle dynamics, and team management, which will shape our approach for the next season.

Challenges and Improvements

Braking System: The primary challenge faced was during the braking test. While the smaller knuckles and compact gearbox offered some benefits, they also limited the effectiveness of the braking system. We plan to refine these components to ensure better performance in future events.

Time Management: The team could not make the production in the required timeline and thus we faced many manufacturing issues including the vendor delay and material scarcity. We will ensure that the timeline is promptly followed from the next season.

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Future Goals

Improved Braking System: Redesign the knuckles and optimize the gearbox configuration to achieve better braking performance.

Comprehensive Testing: Conduct more pre-event simulations and tests to identify and resolve issues in advance.

Expand Team Expertise: Focus on training new members to ensure continuity and knowledge transfer for future events.

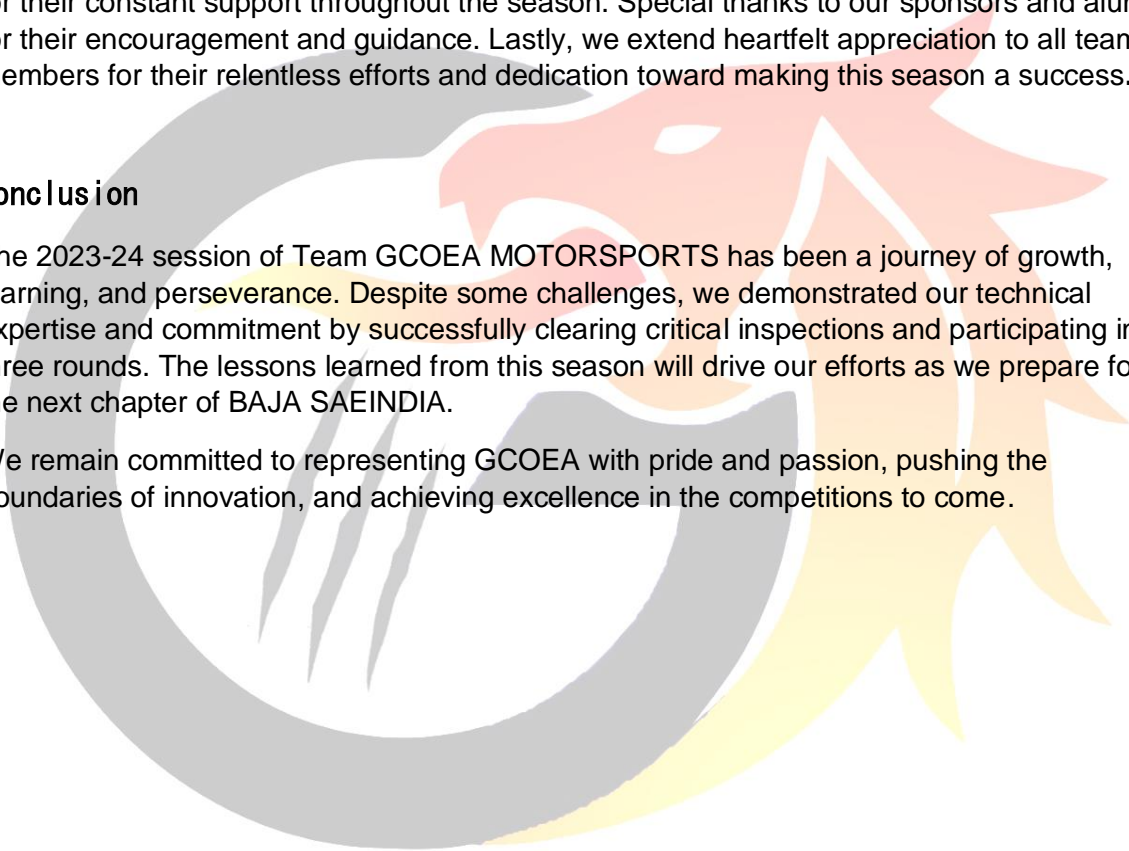
Acknowledgments

We are immensely grateful to our Principal, faculty advisors, and the college administration for their constant support throughout the season. Special thanks to our sponsors and alumni for their encouragement and guidance. Lastly, we extend heartfelt appreciation to all team members for their relentless efforts and dedication toward making this season a success.

Conclusion

The 2023-24 session of Team GCOEA MOTORSPORTS has been a journey of growth, learning, and perseverance. Despite some challenges, we demonstrated our technical expertise and commitment by successfully clearing critical inspections and participating in all three rounds. The lessons learned from this season will drive our efforts as we prepare for the next chapter of BAJA SAEINDIA.

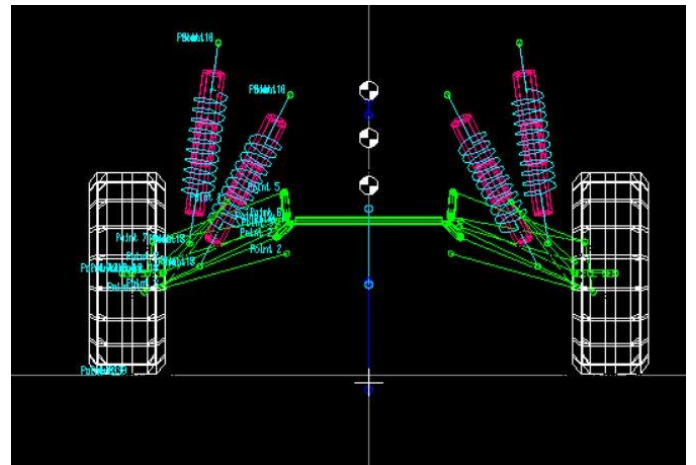
We remain committed to representing GCOEA with pride and passion, pushing the boundaries of innovation, and achieving excellence in the competitions to come.



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