



BMSINSTITUTE OF TECHNOLOGY AND MANAGEMENT

Avalahalli, Doddaballapur Main Road, Bengaluru - 560064

Department of Mechanical Engineering

Motorheads Club

Preamble

The Motorheads Club is the official student-racing / automotive-engineering club of the Department of Mechanical Engineering at BMSIT&M. It aims to bring together students passionate about motorsports, vehicle design, fabrication and performance, providing hands-on experience in automotive engineering through design, build, test and competition projects. The club supports the vision of the department and institute by promoting innovation, teamwork, industry-relevant skills, and sustainable mobility solutions.

Objective

1. To design, fabricate and test automotive / kart / EV / hybrid vehicles and participate in competitions and events (karting, EV challenges, etc).
2. To develop member skills in automotive systems (engine, transmission, chassis, suspension, EV powertrain etc), fabrication, CAD/CAM, testing and vehicle dynamics.
3. To collaborate with industry, faculty and research centres to provide real-world automotive engineering exposure, internships, workshops and guest lectures.
4. To foster teamwork, project-based learning and interdisciplinary coordination (mechanical, electrical & electronics, computer science, etc) in vehicle design and motorsports.
5. To increase the profile of the Mechanical Engineering Department by showcasing innovations, student achievements and sustainable mobility solutions.
6. To promote safe, efficient, and eco-friendly vehicle design practices, including electric/hybrid mobility and sustainable engineering.

Official Links

- **LinkedIn:**
https://in.linkedin.com/company/motor-heads-bmsit?utm_source=chatgpt.com
- **Instagram:**
https://www.instagram.com/motor.heads_bmsit/?hl=en

Coordinator
Dr. Nagamadhu M

HoD, ME



BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Avalahalli, Doddaballapur Main Road, Bengaluru - 560064

Department of Mechanical Engineering

Motor Heads Club

Date: 11/10/2025

Following events attended and their details

Sl. No.	Participants	Name of the event	Date of the event	Place of the event	Awards
1	Dr. Nagamadhu M (faculty coordinator) + 30 student members	Anwshana 2025	28 th March, 2025	BMS Institute of Technology and Management	1 st Prize
2	Dr. Nagamadhu M (faculty coordinator) + 30 student members	National Level Solar Electric Vehicle Championship 2025 (SEVC) and the Engine/Electric Kart Vehicle Championship 2025 (EKVC)	12 th to 17 th March 2025.	Hindusthan College of Engineering and Coimbatore Society of Racing Minds	Design Awards
3	Dr. Shripad Diwakar (faculty coordinator) + 33 student members	Indian Karting Race (IKR)-2023 Competition.	12 th to 16 th Oct 2023	Galgotia University and Buddha International Circuit, Greater Noida.	Future Award
4	Dr. Shripad Diwakar (Faculty Coordinator) + 25 student members	Indian Karting Race (IKR)-2022 Competition.	23 rd to 29 th Oct 2022	Galgotia University and Buddha International Circuit, Greater Noida.	Future Award
Workshop and conference					
Sl No	Event	Date	Organized		
01	Training Program	26 th to 27 th Sept 2025	Polymer Product Development Process, CIPET, Bengaluru		
02	5 days skill development program	05 th to 09 th Dec 2024	NITTE, Bengaluru and Coimbatore Society of Racing Minds		
03	Conference	22 nd and 23 rd August 2024	ICAMST2024, MSRIT, Bangalore		

Coordinator Motorheads

HOD, ME

Dr. Madhu Hc



BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Avalahalli, Doddaballapur Main Road, Bengaluru - 560064

Department of Mechanical Engineering

Motor Heads Club

Activities Planned

Date: 11/10/2025

SI No	Details	Tentative Date	Association
01	5 days skill development program	24 th to 28 th Jan 2026	BMSIT&M, Bengaluru and Coimbatore Society of Racing Minds
02	Go Kart Design Challenge (GKDC) 2026	20 th – 24 th Feb 2026	Kari Motor Speedway
03	Engine/Electric Kart Vehicle Championship 2025 (EKVC)	12 th to 17 th March 2026.	Hindusthan College of Engineering and Coimbatore Society of Racing Minds
04	Publication at Scopus	Feb 2026	EV battery characterization using predictive models
05	Industrial Visit	Dec 2025	Simple Energy Private Limited


Coordinator Motorheads
11/10/25


HOD, ME
Dr Madhu KC

BMSIT&M

TEAM MOTORHEADS

IKR 2022

PROGRESS REPORT

6th October, 2022.

From,
TEAM MOTORHEADS,
SAE India BMSIT Collegiate Club,
BMS Institute of Technology & Management,
Doddaballapur Main Road, Avalahalli,
Yelahanka, Bengaluru – 560064.

To,
The Principal,
BMS Institute of Technology & Management,
Doddaballapur Main Road, Avalahalli,
Yelahanka, Bengaluru – 560064.

Respected Sir,

SUB: request for release of funds for IKR 2022

This document contains the progress report, certificates of participants and the bills of the project. The team has represented the college in IKR 2022 and have achieved 7th position in endurance event and ISIE FUTURE AWARD.

A sum of INR 1,82,210/- was spent on the project and the funds were arranged by the Team Members and has to be reimbursement to the respective team members. We have already received a sum of INR 1,20,000/- and we request you to release the fund of INR 50,000/- to repay the members.

We owe the college our achievements in the event. We thank you and the respective faculty for their kind support and help.

Thank You,

Yours Sincerely,

TEAM MOTORHEADS.

Dr. K. M. Sathish Kumar,
HOD, Department of mechanical engineering.

Dr. Shripad Diwakar,
SAE Club co-ordinator.

INDEX

Sl No	Description	Page No
1.	Restoration of old kart engine	4
2.	Team Formation	5
3.	Registration for IKR 2022	6
4.	Planning	6
5.	Designing	7
6.	Testing	8
7.	Finalizing Design	9
8.	Fund Raising	10
9.	Redesigning and Testing	12
10.	Presentation in College	15
11.	Packing and Logistics	16
12.	Attending the Competition	18
13.	Getting home an award	21

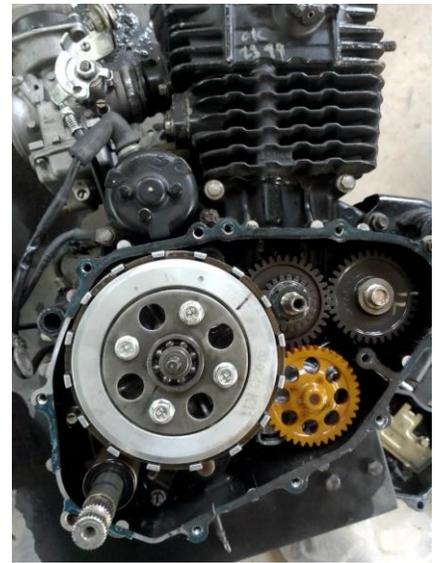
RESTORATION OF OLD KART

The existing IKR kart was restored to have a hands-on experience before starting with the IKR 2022.

The issues with the previous engine in the kart was resolved and it was tested to make sure we get all the required data which would help us in making a better kart from the existing one.



Resolving timing issues in engine.



Clutch cover opened to set timing.



Bodywork painting.



Holes tapped in engine block.

TEAM FORMATION:

The existing members of the BMSIT&M SAE colligate club were keen to participate in a IKR 2022 to keep the club alive and give the freshers an experience in the events so that they can carry forward the legacy of TEAM MOTORHEADS. The team needs people who would design the Go-Kart and Jerseys, technical team to help build the Go-Kart and business team to help us raise funds through sponsorships to buy parts for the Go-Kart.

Several announcements were made and many meetings were held to finalise the team.



A poster for team meeting.

REGISTRATION FOR IKR 2022:

After the formation of the team, it was successfully registered to participate in IKR 2022, by paying the mentioned registration fees. The team decided to carry forward the existing name and logo.

Decision was taken to carry forward with the existing kart after checking compliance with the rulebook.

PLANNING:

Team Motorheads is the automotive team of BMS Institute of Technology and Management Bangalore. With members from all streams of engineering, Team Motorheads is a truly diverse team. With ISIE IKR 2022, Team Motorheads wants to further strengthen its understanding and expertise with Karting events.

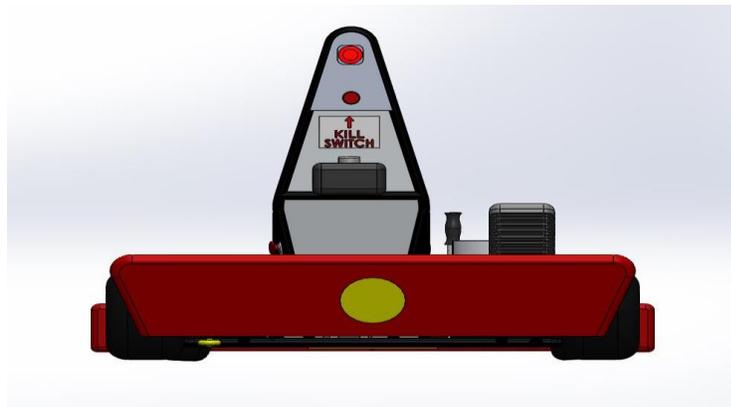
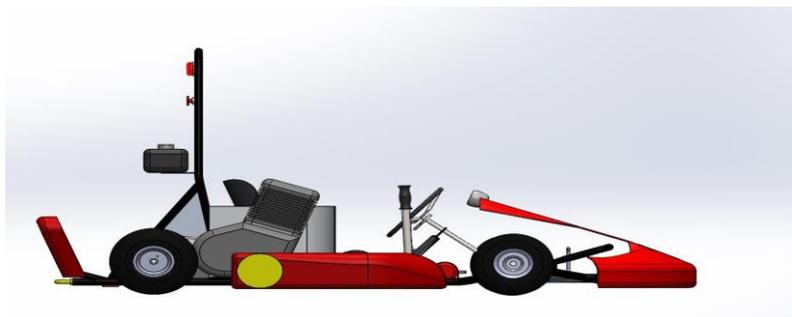
The main objective of building a Go-Kart is to understand the fundamentals of the design and fabrication of a vehicle along with vehicle dynamics. It also promotes research and development in various departments involved in building the Go-Kart, thus enabling students to create ideas and innovate new tech. The primary power is obtained from an IC engine that runs on Petrol to provide power for the motion of the kart, providing great versatility with power output and ride options.

The team was further divided into sub teams and responsibilities were allotted to each sub teams. Members were allotted their work and deadlines were set to make sure the work is completed on time.

DESIGNING:

The Kart designed for IKR 2022 is the IKR 2020 contender with significant technical upgrades. The technical specifications are as follows:

Particulars	Specifications
Kerb Weight	79 kgs
Dimensions	2045mmx1340mm
Engine Type	149.5cc, Single cylinder-Pulsar AS150 4-Stroke, Air Cooled, Twin Spark Ignition
Maximum Power	16.8 BHP
Maximum Torque	13 Nm
Battery	12V Lead Acid Battery
Chassis Material	Carbon Steel (AISI 1080)



CAD model of the kart

TESTING:



The restored kart was presented to principal.

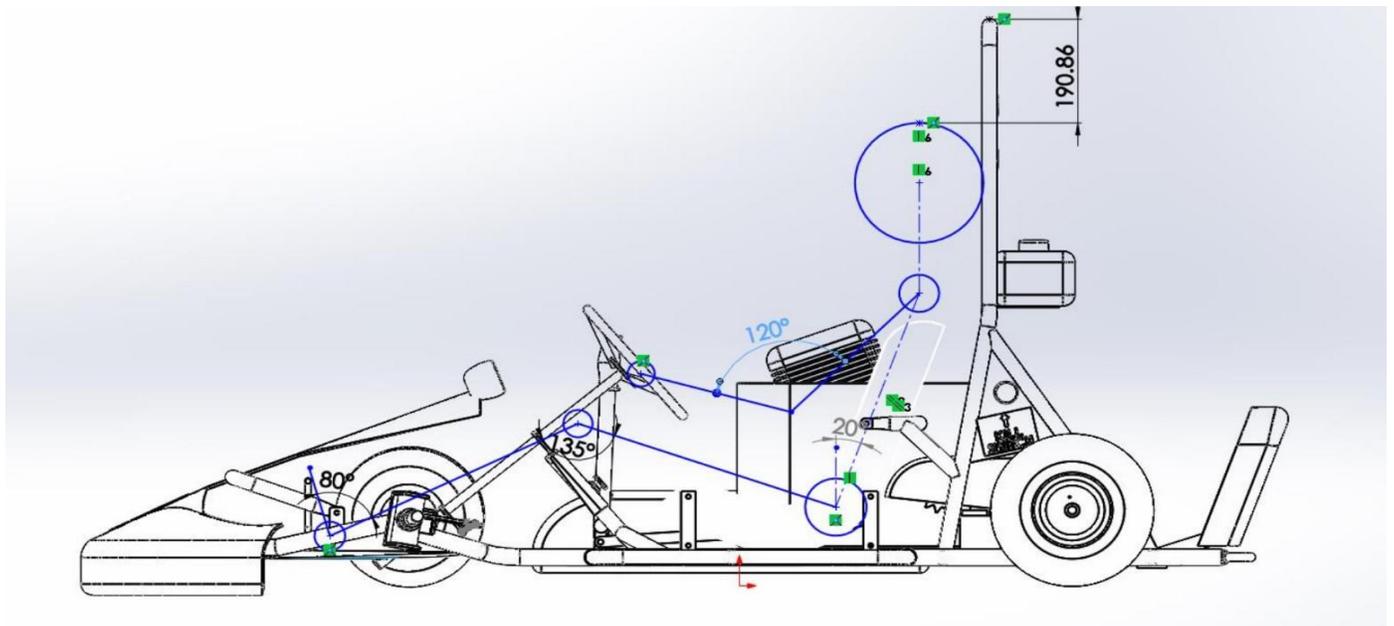
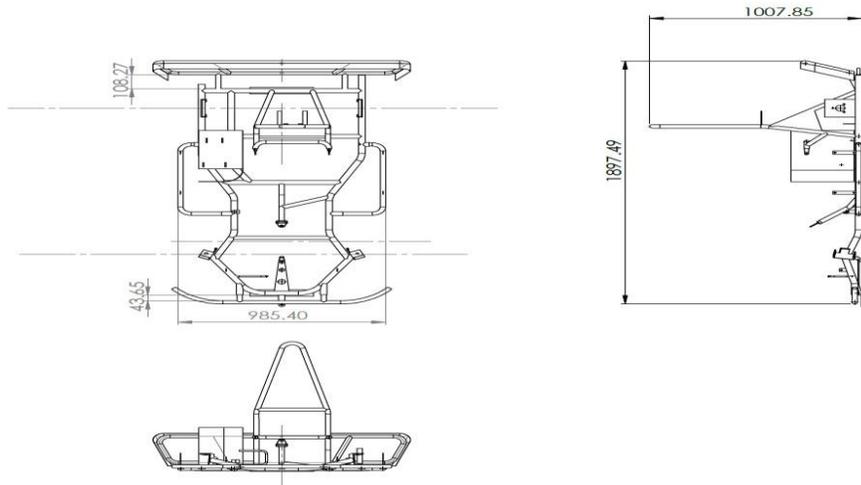
The kart was tested continuously and modifications were made to increase the performance. Meanwhile it was made sure that the kart was reliable and the weak points of the kart was noted and worked on.



Testing the restored kart.

FINALIZING DESIGN:

After continuous testing of the engine, braking system, steering of the Go-Kart. We were successfully able to finalize on one design for the Go-kart and were determined to make it a reality with the built-up confidence after vigorous amount of testing that took place with the parts.



CAD models of final design.

FUND RAISING:

The funds for travelling, accommodation, food, team jersey, and miscellaneous are spent by the respective individuals of the team.

The funds for fabrication of the kart, logistics, driver safety gear, competition registration, power tools have been accounted with the funds provided by the college and sponsorship obtained by a few companies.

A sum of INR 20,000/- was obtained as sponsorship for the event by a few industries. As promised to the sponsors we have their logos printed on our team jersey and kart livery.



TEAM JERSEY.






**BMS INSTITUTE OF TECHNOLOGY
AND MANAGEMENT**

TEAM MOTORHEADS

**SPONSOR
HANDBOOK**

Doddaballapur Main Road, Avalahalli, Yelahanka,
Bengaluru - 560064.

TEAM MOTORHEADS

THE TEAM

The Team motorheads is a club that follows the moto "Racing is a Mindset" and has been part of many competitions and has won many awards in motorsports. The team has proudly represented the college in many national and international tournaments bringing glory and has built a name for itself

THE COMPETITION

IKR 2022 is Student Go-Kart design and manufacturing competition. Engineering students from all over India register their team and compete with each other in different rounds of the event. Indian Karting Race is a contest formulated to enhance the approach of students practicing Engineering.

THE KART

The kart being built is a 160cc engine shifter kart powered with a TVS engine with a in-house manufactured chassis. The kart being designed for performance is highly hopeful for winning the championship this year



ACHIEVEMENTS

Our team has been competing in Motorsports events for previous 7 years and has won the best acceleration award in 2019 and the future team award in 2020. The team has also participated in the formula bharath virtual round for the engine category in 2020 and the Pi-EV competition in 2022




CATEGORY

FUND	PERKS MENTIONS ON
BRONZE Rs. 2000	KART LIVERY
SILVER Rs.5000	KART LIVERY WEBSITE JERSEY BACKSIDE
GOLD Rs.10000	KART LIVERY WEBSITE JERSEY SLEEVE POSTERS
PLATINUM Rs.20000	KART LIVERY WEBSITE JERSEY FRONTSIDE POSTERS BANNERS
DIAMOND Rs.30000	KART LIVERY WEBSITE JERSEY CHEST POSTER BANNER TITTLE SPONSER

FUTURE PLANS

The Team is focused on designing a racecar for the Formula Bharath 2024 EVENT and are pushing hard to make it a success. With many more motorsport events scheduled in the college and country the team is much excited and is looking forward to add more feathers to their cap.

CONTACT DETAILS

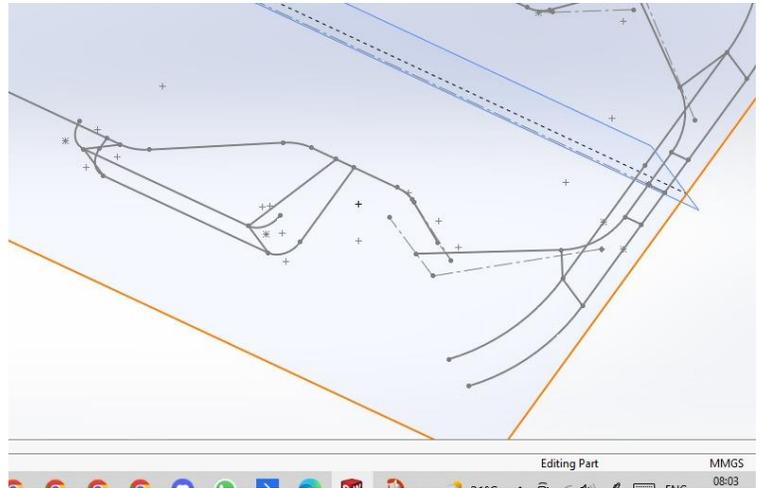
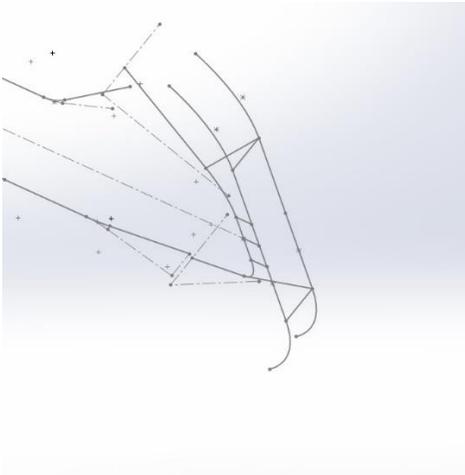
For Further Information Contact

teammotorheads@bmsit.in
Adithya R Hiremath
adityahiremathr3@gmail.com
+91 6366063535

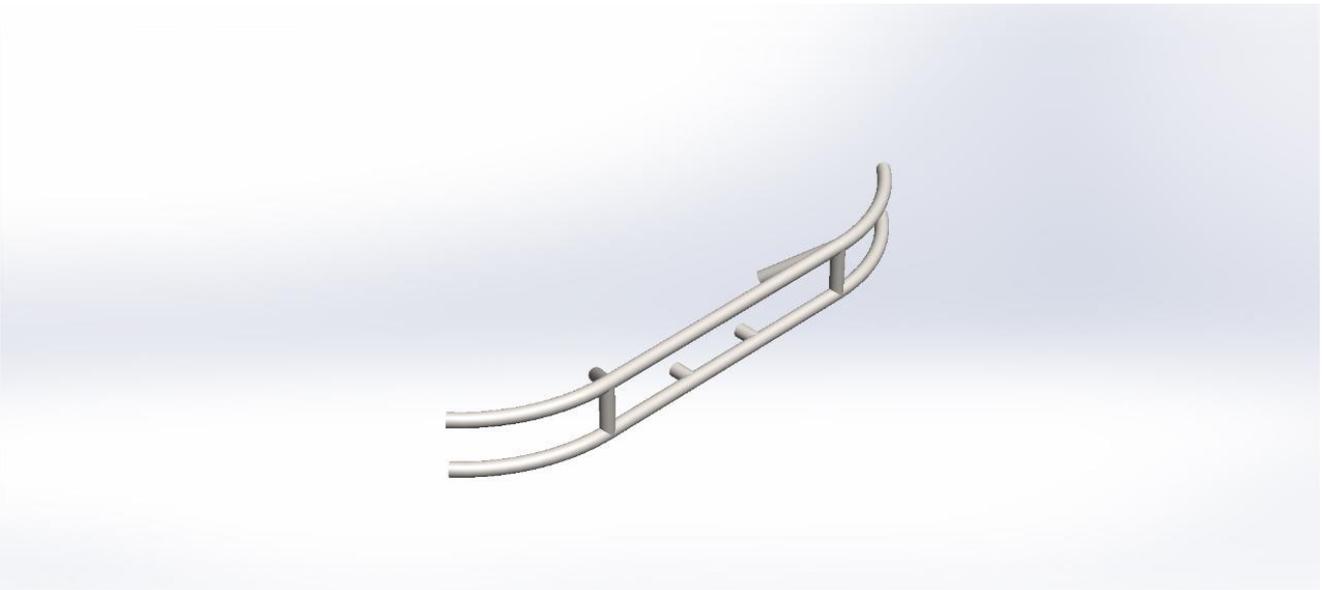
Rajath M Patel
+91 9448700862

Sponsorship brochure.

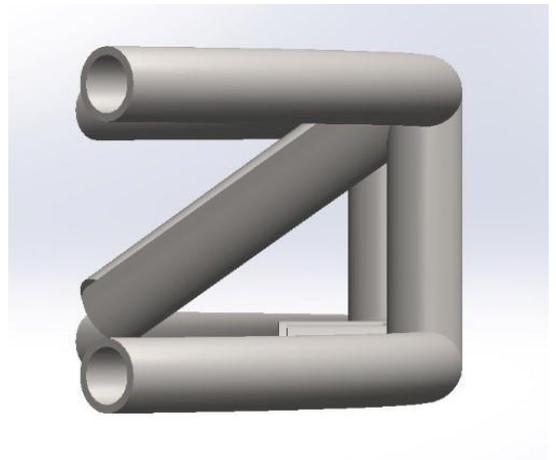
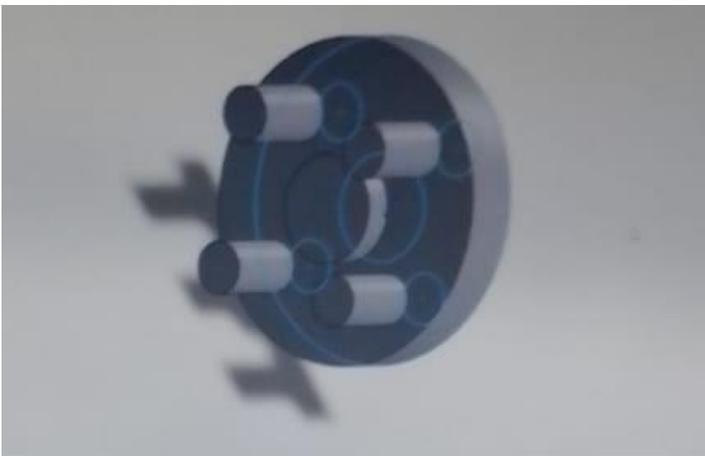
REDESIGNING AND TESTING:



Redesigned chassis elements.



Redesigned front bumper



Since the old chassis was used, we had to make plenty of changes to it and repair the faults and cracks in it. The bumpers and floor closeouts are replaced with new parts which are now in compliance with the rulebook. After the updates in the chassis, the drivers have given very positive feedback about the handling of the kart, with special emphasis on the point that the kart is now more stable and agile than earlier, and that they feel more confident in corners than earlier.

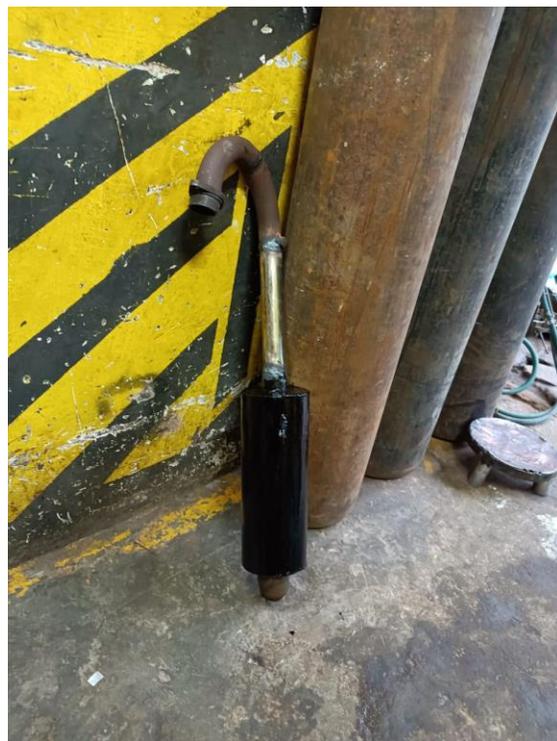
Other than the chassis there were updates in the electronics and the bodywork of the kart.

The firewall and the exhaust system were the most crucial parts of the kart.

The exhaust system was under continuous testing and updates to extract performance out of the engine. Finally, an exhaust system was made which extracted a lot of power from engine by scavenging, but with increase in performance the reliability of the component reduces and that is what happened with our exhaust system. Reliability issues were spotted with the system. Thus, it was redesigned to have a balance between reliability and performance.



The exhaust with high performance.



Finalised exhaust.

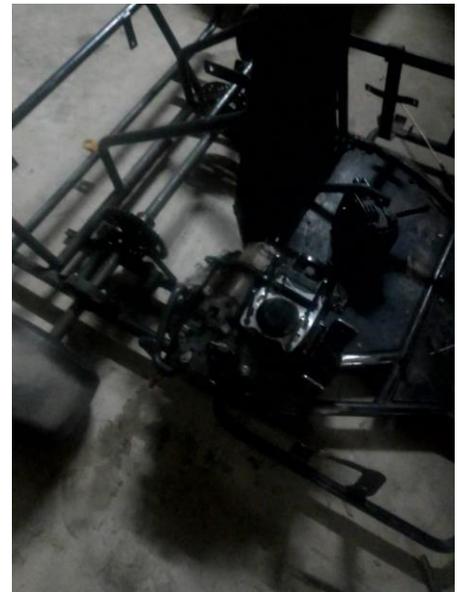
The chassis was tested for strength and reliability, and necessary welds and joints were added. And the finalised chassis was neatly spray painted.



The chassis being repaired.



Chassis after repairs



Engine opened to change gaskets.

PRESENTATION IN COLLEGE:

The finished kart was presented to our Principal **DR. MOHANBABU G N**, Vice-Principal **DR. H K GOVINDARAJU**, HOD of Mechanical Department **DR. K.M. SATHISH KUMAR**, SAE India club co-ordinator **DR. SHRIPAD DIWAKAR**, lab co-ordinators **Sri. Pradeep C** and **Sri. Ashok G C** before it was packed for shipping and sent to greater Noida in the car carrier.



Presentation in college.



PACKING AND LOGISTICS

The time to send the Go-Kart to Noida, Uttar Pradesh had finally arrived and we had contacted JUNOFAST for logistics of the Go-Kart. The below picture shows the payment receipt for two-way shipping of go kart. The kart was disassembled and sent in parts. The chassis was wrapped and packed with support. The parts were packed into a box and sealed. Chassis and some parts were shipped in the trailer and the team carried the rest of the parts in train. All the permits and documents required for the shipping services were procured and shared with the respective shipping company.



JUNOFAST

757/2B, Sector-2 Vasundhara, Ghaziabad, UP, 201012

,Uttar Pradesh

GSTIN : 09AAPFJ2924D1ZB

PAYMENT FROM

Team Motorheads,
GK22

Total: ₹ 33075.0

Amount Paid in Words

Thirty Three Thousand Seventy Five Rupees

Receipt Voucher

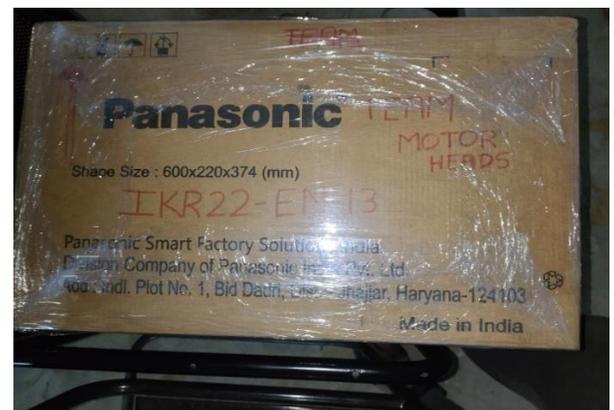
Payment Number: JF/PI/22-23/23

Payment Date : 17-08-2022

Payment Mode : online

Authorized signatory for

JUNOFAST



Packed boxes.



Packed kart.



Kart placed in carrier.



The carrier in which the kart was shipped.



ATTENDING THE COMPETITION:

The kart was sent as per the scheduled date and the team travelled to New Delhi by train and then to Noida by bus and metro services respectively. The kart arrived on the day of the competition and the team managed to quickly assemble the whole kart within the given time.



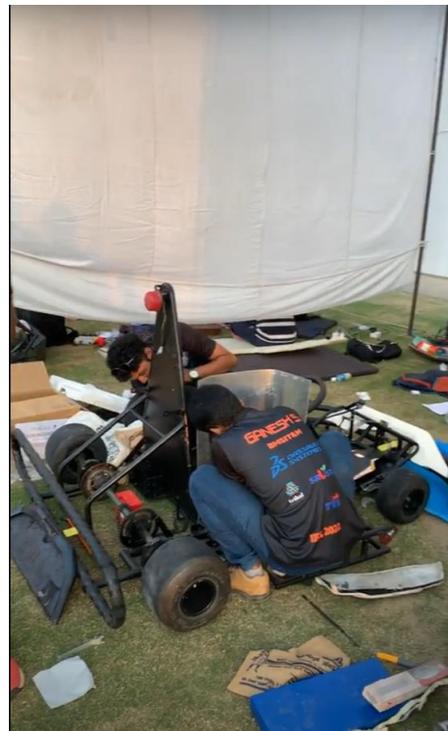
Team assembling the kart for the event.



In spite of shortage of resources and the scorching heat the team managed to clear the Technical Inspection in the third round.



Technical Inspection



Safety gears were rented by paying the respective amount to the ISIE organisation and the safety round was cleared with the presentation of procured safety gears, gloves, goggles, fire extinguishers, first aid kit and so on.



Drivers with safety gears.

Further the team participated in the dynamic events held after the technical inspection. Due to a downpour of rain the battery was damaged and the kart was jump started with the permission from officials. The acceleration and brake test were cleared. Further the skid pad test was cleared.



Team preparing the kart for dynamic events.



During the endurance event the air fuel mixture screw of the carburettor was damaged. Fixing the carburettor issues in frequent intervals the team managed to finish 7th in the event. Due to lesser team members and the issues faced, all the team members were involved in fixing and moving the kart and tools and talk with officials, due to which we have very few pictures of the event.



Our kart in BIC.

GETTING HOME AN AWARD

We cleared all the dynamic events and managed to finish 7th in the endurance event. The ISIE organisers were impressed by the team work and the kart, and thus we were given the ISIE FUTURE AWARD.



Team with award and kart.

The kart was packed and loaded into the trailer on 31st August and the team returned to Bangalore by train. The kart arrived to the college on 16th September and is placed in the ground floor of academic block.

ACTIVITY REPORT OCTOBER -2023

Activity Name: Indian Karting Race (IKR) -2023 competition

Date of event: 12/10/2023 to 16/10/2023

Place of the event: Galgotia University and Buddha International Circuit, Greater Noida

No of participants: 12 (11 student members + 1 faculty coordinator)

Faculty coordinator: Dr. Shripad Diwakar

Event details:

Indian Karting Race (IKR) is a contest formulated to enhance the approach of students practicing Engineering and Diploma courses. It's a student *Go-Kart* design and manufacturing competition. Engineering and Diploma student from all over India register their team and compete with other teams in the different category of the event.

India's biggest Go-Kart final event for the 8th season was conducted during 12th to 16th October, 2023 at Galgotia University and Buddha International Circuit, Greater Noida.

33 teams were participated in IKR-2023 competition from all over India. Team Motor Heads of BMS Institute of Technology and Management extremely performed well in different category of the event and bagged "Future award" with a cash prize of Rs.5000/= in IKR-2023 competition.

On behalf of Team Motor Heads, sincere thanks to our beloved Management, Principal Sir, HoD- Department of Mechanical Engg, VP Sir, Dean (AA), Dean (I&E), Teaching staff members and Technical staff members of Mechanical Engineering department for their continuous support, encouragement, help and necessary suggestions extended during the successful completion of Indian Karting Race(IKR) – 2023.

Finally, our thanks to one and all who directly or indirectly supported us for the successful completion of IKR-2023 event.

Photographs of the event



TEAM MOTOR HEADS AT IKR- 2023 COMPETITION



TEAM MOTORHRADS HAS WON “FUTURE AWARD” IN IKR-2023 EVENT

Report SEVC 2025

The "**Team Motor Heads**" from the Department of Mechanical Engineering actively participated in the **National Level Solar Electric Vehicle Championship 2025 (SEVC)** and the **Engine/Electric Kart Vehicle Championship 2025 (EKVC)**. These prestigious events were held in association with the **Coimbatore Society of Racing Minds** from **12th March to 17th March 2025**. The team demonstrated exceptional engineering skills and innovative design capabilities throughout the competition.

On the final day, an Electric Vehicle Awareness Rally was conducted from the **Hindusthan Campus to Kari Speedway, Chettipalayam (12 km)**, spreading awareness about sustainable mobility. The event concluded with a **race at the Kari Speedway track**, where vehicles were pushed to their limits.

Participation and Achievements: Team Motor Heads exhibited their technical excellence by competing in EKVC 2025. The team faced stiff competition from various institutions and displayed remarkable teamwork and engineering proficiency. Their efforts culminated in winning the prestigious "**Design Award**" at the **Electric Kart Vehicle Championship 2025, Travel for Eco Racing**. This award recognized the team's outstanding vehicle design, structural integrity, integration of OEM parts and innovative engineering solutions.

Participant: **Mr. Ganesh**, Team Lead, followed by 29 student members are participating in this event, two from Electronics and Communication, one from Electrical and Electronics, and twenty-seven from Mechanical Engineering Departments, along with the faculty in charge, **Dr. Nagamadhu M, Department of Mechanical Engineering**.

Supervision: **Dr. SANJAY H.A, Principle, BMSIT&M, Dr K M Sathish Kumar, Dean Academics, Dr. Madhu M C, HoD, ME.**

Thanks to Management, BMSIT&M, Dr. SANJAY H.A, Principle, BMSIT&M, Dr K M Sathish Kumar, Dean Academics, Dr. Madhu M C, HoD, ME.

Photographs are:

Figure 1. Vehicle at Hindustan College of Engineering



Figure 2. Inspection route at Kari Motor Speedway



Figure 3: Design Award



Figure 4. At Collage









SOLAR ELECTRIC VEHICLE ← CHAMPIONSHIP

CERTIFICATE OF APPRECIATION

This is to certify that

TEAM MOTOR HEADS

from BMS Institute of Technology and Management, Bengaluru

has won the “DESIGN ROUND” under Campus Utility Vehicle – CUV Category in **SOLAR ELECTRIC VEHICLE CHAMPIONSHIP 2025**, held at Hindusthan College of Engineering and Technology, Coimbatore, Tamil Nadu, India on 13th – 17th March 2025

CERTIFICATE ID: SEVC/S04/TN2025/476

PRESIDENT
CSRM

SECRETARY
CSRM



BMSINSTITUTE OF TECHNOLOGY AND MANAGEMENT

Avalahalli, Doddaballapur Main Road, Bengaluru - 560064

Department of Mechanical Engineering

Motorheads Club

ANVESHANA 2025

Electric Vehicle Project – BMSIT&M

Project Overview

The *Electric Vehicle (EV) Project* is a student-driven innovation initiative developed under the Department of Mechanical Engineering, BMS Institute of Technology and Management (BMSIT&M). The project involved the co-development of a 6-seater electric vehicle designed specifically for campus commuting, promoting sustainability, green technology, and practical engineering education.

The project was carried out under the supervision of Dr. Nagamadhu M, Department of Mechanical Engineering, and was supported by the Seed Money/Internal Research Grant of ₹10,35,000/- provided by BMSIT&M. This funding enabled the team to undertake comprehensive design, fabrication, and testing activities to realize a fully functional electric vehicle prototype.

Objective

The primary objective of the project was to design and fabricate a zero-emission electric vehicle that could serve as a reliable and sustainable mode of transport for short-distance commuting within the campus. The focus areas included energy efficiency, ergonomic comfort, cost optimization, and environmental responsibility. The project also aimed to provide hands-on learning exposure to students in the areas of electric mobility, vehicle dynamics, powertrain design, and renewable energy systems.

Design and Development

The vehicle was co-developed by a multidisciplinary team of students from Mechanical, Electrical, and Electronics Engineering disciplines. The development process covered concept design, 3D CAD modeling, structural analysis, powertrain integration, and prototype fabrication.



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Key highlights of the design include:

- A custom-built lightweight chassis ensuring strength and stability.
- Battery-powered electric drive system with optimized power-to-weight ratio.
- Regenerative braking system for improved energy recovery and efficiency.
- Comfortable six-passenger seating arrangement, ideal for intra-campus mobility.
- Digital dashboard and control interface for monitoring speed, battery status, and diagnostics.
- Extensive testing was conducted to ensure safety, durability, and performance in typical campus conditions. The design adheres to fundamental vehicle engineering standards while maintaining affordability and user convenience.

Achievements

The project achieved significant recognition at ANVESHANA 2025, a prestigious national-level competition celebrating innovation and applied engineering. The BMSIT&M 6-Seater Electric Vehicle Project secured the 1st Prize, sharing the top position with IIT Hyderabad, and received a cash award of ₹1,00,000/-. This accolade highlights the innovation, teamwork, and technical excellence demonstrated by the student team and their mentor.

Impact and Future Scope

This project has set a strong foundation for future research in electric mobility solutions, battery management systems, and solar-assisted charging technologies. The prototype for sustainable campus and corporate transport systems.

The initiative not only aligns with India's vision of promoting clean energy and e-mobility but also reinforces BMSIT&M's commitment to fostering innovation, applied research, and industry-relevant learning in engineering education.



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6-Seater Electric Vehicle Project secured the 1st Prize, sharing the top position with IIT Hyderabad, and received a cash award of ₹1,00,000/-