

RULEBOOK **INDIAN KARTING RACE 2023**



JULY
2023

VENUE:
Buddh International
Circuit, Greater Noida

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Advice from Our Tech Inspectors

Indian Karting Race technical inspection team welcomes you to the most challenging ISIEINDIA Design Series competitions. Many of us are former competitors of various motorsports, working to promote E-Mobility and Skill Development who are now professionals in the automotive industry.

We have two goals: to have a safe competition and see every team on the track.

Top Tips for Building a Combustion and Electric Karts and Passing Tech Inspection

- Start work early. Everything takes longer than you expect
- Read all rules very carefully. If you don't understand something, ask for clarification.
- Start Testing your vehicle early.
- Make brake Testing an early priority.

KINDLY CHECK WITH THE IMPORTANT GUIDELINES GIVEN BELOW

The new rules and regulations has been updated in the rulebook. Teams participated in previous Go Kart competition are encourage to check the compliance of the new rules and regulation and get thoroughly acquaint themselves with the new rules as several changes have been implemented.

New changes, modifications and added rules are highlighted as below,

- Changes in the rules – **text in green color**
- New added rules – **text in blue color**

A ADMINISTRATIVE RULES

A.1 Introduction

A.1.1 About ISIE

Imperial Society of Innovative Engineers (ISIE, National youth award winner by govt. of India, Accredited by MSME, SFI-USA and FMSCI also recommended as best innovative platform by MNRE Govt. of India) are well known Society of India for organizing Motorsports events, live projects based Industrial Training and Research and publication. ISIE – India provides a platform to the students and professionals for development and enhancement of their technical as well as managerial skills. We are developing platform especially for engineering students where they can easily face real-time engineering problems and find the best solution, especially in the sector of Electric and Combustion Vehicles.

ISIE - India is the India's best platform for the engineering students to develop practical skills. We believe in "Learning, Implementation, and Sharing". The Society has a very strong placement and consultancy wing that has an excellent network of the top companies.

Our core competencies include effective personalized industry-based training and excellent placements. ISIE is committed to the development in the field of renewable source of energy; these are the best solution to save our environment and development of our country. We are organizer of Electric, Solar & Combustion Category Student Manufactured Vehicle National and International Events.

A.2 Our Accreditations

A.2.1 Federation of Motor Sports Club of India (FMSCI)

The FMSCI is recognized by the Government of India, Ministry of Youth Affairs and Sports as the only National Sports Federation (NSF) for the promotion and governance of motorsports in India. The FMSCI is also a long- standing member of the International Federations for motorsports viz. Federation International de l' Automobile (FIA), Paris (four wheelers and above) and Federation International de Motocyclisme (FIM), Geneva (2 and 3-wheeler motorsports).

The FMSCI is also a member of the Indian Olympic Association. The FMSCI has a wide base of affiliated member clubs spread across India.

A.2.2 ISO 9001:2008:

ISIE Awarded with ISO 9001:2008 certification for best quality management system. Its ability to consistently provide a product that meets customer and applicable statutory and regulatory requirements and aims to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirement.

A.2.3 Ministry of Micro, Small and Medium Enterprises (MSME)

ISIEINDIA is also associated and recognized by MSME for the services it is providing to the society. The Micro; Small and Medium Enterprises Development (MSMED) Act was notified in 2006 to address policy issues affecting MSMEs as well as the coverage and investment ceiling of the sector. The Act seeks to facilitate the development of these enterprises as also enhance their competitiveness. It provides the first-ever legal framework for recognition of the concept of "enterprise" which comprises both manufacturing and service entities.

A.3 Support and Appreciation

A.3.1 PMO India

ISIEINDIA has been appreciated by PMO India, for its constant effort to promote Electric Mobility in India.

A.3.2 Confederation of Indian Industry (CII)

ISIEINDIA also has support from CII and has used this association for benefit of the participants. Our participants have displayed their vehicles in GES 2017 (Global Entrepreneurship Summit), and GMX 2016 (Global Mobility Expo). They have benefitted from it in gaining, sponsorship for their ideas.

A.3.3 Sports India Expo

ISIEINDIA has given an opportunity for the winners of the previous events to showcase their vehicles in Sports India Expo 2017, held from 22nd August 2017 to 24th August 2017. Sports India 2017 is a b2b business platform for the national and international companies those are into the sports business to find out the new business opportunities in India as well as in overseas market. This event is a great opportunity to network with sports Industry.

A.3.4 Ministry of New and Renewable Energy (MNRE)

Ministry of New and Renewable Energy (MNRE), of India, has recognized our efforts as a research project to promote E-Mobility among the youth of India. The Ministry of New and Renewable Energy (MNRE) is the nodal Ministry of the Government of India for all matters relating to new and renewable energy. The broad aim of the Ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country.

A.3.5 Earth Day Network (USA)

Earth Day Network is a NGO based in USA, whose mission is to diversify, educate and activate the environmental movement worldwide. Growing out of the first Earth Day, Earth Day Network is the world's largest recruiter to the environmental movement, working with more than 50,000 partners in nearly 195 countries to build environmental democracy.

A.4 About ISIEINDIA-INDIAN KARTING RACE (IKR)

It is Student Go-Kart design and manufacturing competition. Engineering /Diploma student from all over India register their team and compete with another team in the different rounds of the event. IKR is a contest formulated to enhance the approach of students practicing Engineering and Diploma courses. This competition held with a permit of FMSCI (Under Ministry of Sports) by the highly professional organizing committee and marshal, scrutineer from different reputed Motorsport organizations and automobile industries.

A.4.1 Objective

IKR is a design and manufacturing of Go-kart event under ISIE Design Restriction and FMSCI/CIK/FIA so as to compete with other teams all over the country from different organizations. Our objective to promote Motorsports as a profession in India, Passion, Creativity, Innovation and practical approach based technical skill in engineering/diploma students.

A.4.2 Scope

Indian companies are also producing go-karts in small scale. Kart racing is generally accepted as the most economical form of motor sport. Go-karts emerged in India in 2003 from MRF. There is ample amount of scope to step forward in motorsport field. IKR also gave students recruitment at event site only.

A.4.3 Participation History

No of Seasons	Venues	Participated Teams
Season 1	Kari Motors Speedway Racing Track, Tamil Nadu	25+ Teams
Season 2	SKCET, Coimbatore	35+ Teams
Season 3	Buddha International Circuit, Greater Noida	40s+ Teams
Season 4	Buddha International Circuit, Greater Noida	50+ Teams
Season 5	RPM racing Circuit, Bhopal	60+ Teams
Season 6	Buddha International Circuit, Greater Noida	35+ Teams
Season 7	Buddha International Circuit, Greater Noida	45+ Teams

A.5 Registration Requirement

A.5.1 Team Requirement

Team Registering for IKR 8th Season must have the following:

- ❖ Team Name
- ❖ Team Logo
- ❖ Team Captain
- ❖ Faculty Advisor(s)

A.5.1.1 Team Members:

The team can consist of a **minimum of 7 and maximum of 30 members**. (INR 1000 extra per member if members exceed more than 30).

This competition is for the student pursuing engineering degree or diploma can form a team and can participate. Valid ID card of the Educational Institute is required as a proof to ensure that Participant is a part of that educational institution/university. Society membership is not compulsory to any participant or advisor in order to participate in the ISIE IKR. But if any Professional or Advisor wants the membership of our society, they can apply online at <https://imperialsociety.in/>

A.5.1.2 Team Name:

The meaningful and inspirational team name is required to distinguish the team in the competition.

A.5.1.3 Team Logo

An attractive team logo is required from participating team. Teams are required to send their team logo in HD by mail after registration is confirmed.

A.5.1.4 Team Mail ID

Every team is required to create a team email id to communicate or query to ISIE.

All the communications between organizing team of ISIEINDIA-IKR and the participating team will be held through team mail ID. Communication through any other Email ID will not be entertained.

A.5.1.5 Team Signature

Every team must have their signature in their team mail ID. You can create it as follows Gmail > settings > signature.

A.5.1.6 Team Representative

Every team must appoint a team representative; it can be anyone (From same college). The team representative will be solely responsible for all the communication (in any form – Telephonic/ by email) with organizing team of IKR. This is to prevent any kind of miscommunication.

A.5.1.7 Team Faculty Advisor

Every team must require one team advisor. Teams are also free to have added one additional team advisor. It is not mandatory for the team Advisor to accompany the team to the competition. Team Advisors may advise their teams on general engineering and engineering project management theory.

A.5.1.8 Indemnity Form

Every team must fill Indemnity form before entering the dynamic round.

A.5.1.9 Liability Waiver

All on-site participants, including Advisor, are required to sign a liability waiver upon registering on-site.

A.5.2 Driver's Requirement

A.5.2.1 Driver's Age

The age required to be a driver in the competition is 18 years.

A.5.2.2 Number of Drivers

Every team should have minimum two drivers.

A.5.2.3 Driver's License

Team members who will drive a competition Kart at any time during a competition must hold a valid, the government issued driver's license. In case of International driver, International driver permit is required as per Govt. Rules.

A.5.2.4 Driver Restriction

Driver must be from the team. The professional driver from outside is not allowed to ride the Kart during the competition.

A.5.2.5 Medical Insurance

Individual medical insurance coverage is required for both driver and is the sole responsibility of the driver. A driver without a valid Medical Insurance will not be allowed to drive in the Dynamic Events.

A.5.3 Kart Category

Teams can participate in any of the category viz. Electric and Combustion.

A.5.4 Kart Eligibility

A.5.4.1 Team Developed Kart:

Kart entered into ISIE-IKR must be conceived, designed, fabricated and maintained by the team members. Teams are required to make at least Three minutes video of the whole manufacturing process of the Kart before the dynamic round and upload through mail.

A.5.4.2 Fabrication

It is the intent of the IKR to provide direct hands-on experience to the Professionals.

Therefore, they can perform all fabrication as per their project plan submitted to the organizing committee.

A.5.4.3 Kart Used for Multiple Years

Teams May bring their same kart used for multiple years but must carry all document substantial improvements and/or upgrades to the Kart as used in the previous year's competition. There is no direct entry in the dynamic round for the previous year participating team. They have to go through the report submission round along with Technical Inspection.

A.6 Mentorship Program (Online)

A.6.1 About

As ISIEINDIA works on the principle of learning, Implementing and sharing, we organize/provide ONLINE MENTORSHIP PROGRAM for all registered teams for Indian Karting Race (IKR), Season 8.0.

A.6.2 Agenda of online mentorship program

ISIEINDIA will be organizing 3-days Online Mentorship Program that covers all the important aspects required for the development of a complete Go Kart for teams. Teams who want to have live interaction, we will charge nominal fees for live session that will be decided based on number of members attending the mentorship.

A.6.2.1 The highlights of this program are

- ❖ Team formation & project planning
- ❖ Automobile static engineering
- ❖ Dynamic Calculations
- ❖ CAD Designing
- ❖ Go-Kart Development & Fabrication

- ❖ Go-kart testing & tuning
- ❖ Team queries resolving session
- ❖ Speaker for this program will be from the known automobile industry.

A.6.2.2 Benefits of online mentorship program

- ❖ Hassle free: No more requirement to spend on travel, accommodation etc.
- ❖ Suitable Dates: No more worry about Exams, Placement dates etc. during the program. Choose dates as per your convenience before the Virtual Round.
- ❖ Sponsorship Opportunity: Get Sponsorship Opportunity by ISIEINDIA to host Online Mentorship and enroll other students to attend the program.
- ❖ Personal Assistance: Personal Assistance by Industrial Trainers. Team can learn the desired topics and can ask query related to event (Technical or Non-Technical Query).
- ❖ Certificate: Certificates will be provided to every student who attends Online Mentorship Program.

A.6.2.3 Procedure to finalize Online Mentorship Program Dates

The confirmed team required to send application mail to conduct Live Online Mentorship with suitable dates for 3 days. The last date to apply will be intimated by Indian Karting Race official mail Id.

The necessary requirements (Entry fees, Minimum Number of Participants, Internet Connection, Laptop/Mobile Phone etc.) to conduct the mentorship Program will be shared with you by mail.

A.7 Rulebook Test

- ❖ All the teams are required to attend the rulebook test for INDIAN KARTING RACE-IKR, schedule date given by organizing committee. This rulebook test consists of questions from Rulebook of 8th INDIAN KARTING RACE-IKR.
- ❖ This test contains maximum marks of 100.
- ❖ 7 members from each team will appear for test and the average marks of all members will be counted.
- ❖ The rulebook test scores will be added to the final round total scores.

A.8 Registration Process and Deadlines

A.8.1 Steps to Register

Teams can register through our website: www.imperialsociety.in > Events (Select IKR and appropriate Season) > Fill Required Details

A.8.2 Registration Process

Signup / Login with your details at this link (link for signup/login) Register for the event. Select event name and complete your details. Add detail of team members.

Submit your form (confirmation on email or SMS will be received). Send your payment proof through mail at isie.ikr@imperialsociety.in

Note: Once the team has been registered, they are required to submit their fees within 5 working days.

A.8.3 How can you Access to Team Account / Add or Remove Members?

A.8.3.1 Login in to your team account: <https://igms.imperialsociety.in/login>

A.8.3.2 You must Sign up /Register as new user with your same email Id Your registered event will automatically visible to you on Login: My Event> Add Member > Update details >Submit.

Note: If there is need of change in Team Leader/Faculty Advisor/Team name, they have to send an application form with the signature of officials, we will provide the Login/Password details on the approval of the application.

A.8.4 Team Undertaking Form

After online registration and the payment confirmation, a copy of the team undertaking (attested by the higher authority of the team respective Organization) must be sent to isie.ikr@imperialsociety.in within 10 working days after payment confirmation.

A.8.5 Entry Fee

A.8.5.1 Registration Fees:

Registration fees to participate in the Indian Karting Race season 8.0 is **INR 32,500 (Including GST)** per team.

Phase I Registration	Phase II Registration	Phase III Registration
INR 10,000	INR 10,000	INR 12,500

- ❖ Withdrawals: In case of team withdrawing from IKR 2023, Registration Fee is not refundable.
- ❖ Registration Fee is inclusive of free recorded session for Design & Manufacturing of Go-kart. Participants from team will be given access to the recorded videos on Design and Development of Go Kart for 1 Year.

A.8.5.2 Female Team Fee discounts

- ❖ All Females in a team:

There is **50% concession on team registration fee** for the complete female team to promote the vision of women empowerment.

- ❖ For More than 10 Female members in a team

If a team has more than 10 female members, there is **50% concession on Phase I Registration Fee**.

A.8.5.3 Registration Fee Mode

- ❖ Online

1. Easy pay (<http://igms.imperialsociety.in/easypay/>)
2. Internet Banking (Teams paying through Internet banking must mail us for Account Details).

- ❖ Offline

1. NEFT through any Bank
2. Cash deposit through Challan

3. Demand Draft In favor of Imperial Society of Innovative Engineers, Payable at ICICI Bank, Sector 63, Noida.

Note: You can also pay through online on our website through easy pay.

A.8.5.4 Registration Fee Deadline and Refund Policy

- ❖ Registration fees must be paid to the organizer by the deadlines, within 5 working days after registration.
- ❖ Registration fee is non-refundable.

A.8.6 Query about the Rules

A.8.6.1 Query type (Must be through only team id/advisor Id)

The Committee will answer any query that is not already answered in the rules that require new or novel rule interpretations.

The Committee will not respond to questions that are already answered in the rules. For example, if a rule specifies a minimum dimension for a part the Committee will not answer questions asking if a smaller dimension can be used.

A.8.6.2 Query submission

Teams can submit their query to our official mail ID isie.ikr@imperialsociety.in.

The query should be done by only team mail Id, and email should contain the team's name as well as the name of the organization.

A.8.6.3 Query Format

The following information is required:

- ❖ Submitter's Name
- ❖ Submitter's Email
- ❖ Topic (Select from the pull-down menu)
- ❖ Organization Name (put this in the box labeled "Subject")
- ❖ Put your HOD/Adviser in CC.

You may type your question into the "Message" box or upload a document. For any sort of query always compose new mail with the proper subject.

A.8.6.4 Response Time

The Rules Committee will respond as quickly as possible, however, responses to questions presenting new issues, or of unusual complexity, may take more than two weeks.

Please do not resend questions.

B JUDGING CRITERIA

B.1 Report Submission

B.1.1 Group A

B.1.1.1 Design Report

- ❖ CAD file

- ❖ Orthographic images (Jpg Format only) of CAD model of Chassis. (CAD files when asked).
- ❖ Orthographic images (Jpg Format only) of a complete model of vehicle. (CAD files when asked).
- ❖ Occupant packaging (diagram representing ergonomics).
- ❖ Component packaging (images representing position and packaging of all necessary components of the vehicle).
- ❖ Reports showing CAE simulation on chassis, along with calculation (CAE files when asked.)
- ❖ Reports showing the calculation for brake selection, steering geometry and others. Along with simulation reports.

B.1.1.2 Vehicle Control System

- ❖ Teams are required to submit control system of the vehicle it includes mechanical and Electrical & Electronic Control system (for electric category) of the vehicle.

B.1.1.3 Tractive System

- ❖ Power Unit Used.
- ❖ Transmission System/Drive train.
- ❖ Calculation for the transmission system.
- ❖ Energy Storage system (For Electric Category only)
- ❖ Battery Specifications with scan copy of the original bill and datasheet (For the Electric Category only)
- ❖ Calculations resulting in the choice of battery(For the Electric Category only)
- ❖ Battery limitations and failure report (For the Electric Category only)
- ❖ Electrical Connection Report (For Electric Category only)
- ❖ Block diagram of the whole electrical circuit (For the Electric Category only)
- ❖ Schematic, wiring diagram and blueprint using any Electrical Diagram Software (For the Electric Category only)
- ❖ Proper circuit diagram and blueprint of innovations used.

B.1.1.4 Design Validation Plan (DVP) & Design Failure Mode effect and Analysis (DFMEA)

B.1.1.5 Project Plan (Gantt chart)

The project plan should have planned from starting to test of the vehicle.

B.1.1.6 Cost Report

Cost report should have effective market analysis and research along with supplier details.

B.1.2 Group B

B.1.2.1 Vehicle specification:

This report will include the following information of the vehicle, as manufactured.

- ❖ The overall dimension of the vehicle.
- ❖ The weight of the vehicle.
- ❖ Wheels and tires specification.
- ❖ Brake specification.

- ❖ Steering specification.
- ❖ Power Unit Specification.
- ❖ Transmission type.

B.1.2.2 Safety considerations:

This report will include all the information regarding

- ❖ Safety consideration for the driver.
- ❖ Measures to minimize the risk of battery or motor overheating.
- ❖ How teams plan to minimize risk in case of fire.

B.1.2.3 Changes made

This report will include a comparison of the reports in Group A and Those provided in Group B. This is to check how accurate their vehicle as compared to the one which they proposed in Group A reports. This difference should not be more than 20%.

Note: Any requests to make changes to items described in the compulsory documentation, after the submission deadline, must be sent to the event organizer in writing by the Team Manager. If granted, any document submitted by a team will supersede all previous versions.

B.1.3 Group C

In this Group the deliverables are not documents but videos and photos of the vehicle, fulfilling following requirement.

- ❖ College Level Video showing different stages of fabrication of the vehicle and testing of the vehicle.
Pictures showing participants working at various stage of fabrication.
- ❖ Team innovation video, showing their innovations and its working principle.

B.1.4 College Level Technical Inspection

B.1.4.1 Teams are required to submit only soft copy of College Level T.I. sheet as per given deadline. The format of technical inspection sheet will be provided by the organizer.

B.1.4.2 The College Level Technical Inspection Sheet should be submitted by Team Faculty Advisor.

B.1.4.3 If teams fail to submit the same may not allow participating in the final round.

B.1.5 Deadline and Penalties

There are no exceptions to the document submission deadlines and late submissions will incur penalties. Please note that different documents or submissions may have different deadlines - check the website/instagram/linkedin/emails.

B.1.6 Web Based submission

Team registration form, Payment proof, team change form, Group document submission, college level technical inspection and final design report must submit through mail at isie.ikr@imperialsociety.in

B.2 Event points

ROUNDS	COMBUSTION CATEGORY (MAXIMUM SCORE)	ELECTRIC CATEGORY (MAXIMUM SCORE)	AWARDS
Technical Inspection	0	0	NA
Brake Test	Qualifier		NA
Weight test	50	50	Light Weight Award
Innovation	50	50	Best Innovation
Design	100	100	Best Design
Business Plan & Cost	100	100	Best Business Plan & Cost
Acceleration	100	100	Best Acceleration
Tug of War	0	0	Best Tug Of War
Cross Pad	100	100	Best Cross Pad Cross Pad Runner Up
Endurance Round	200	200	Best Endurance Endurance Runner Up
TOTAL	700	700	

B.3 Awards

CATEGORY	COMBUSTION CATEGORY	ELECTRIC CATEGORY
Champion	INR 50,000	INR 50,000
Runner Up	INR 30,000	INR 30,000
Best Endurance	INR 10,000	INR 10,000
Runner Up Endurance	Trophy	Trophy
Best Cross Pad	INR 5,000	INR 5,000
Runner Up Cross Pad	Trophy	Trophy
Best Acceleration	INR 5,000	INR 5,000
Best Design	INR 5,000	
Best Innovation	INR 5,000	
Best B-Plan and Cost	INR 5,000	
Lightest Weight	INR 5,000	
First TI Qualify	INR 5,000	
Best Tug of War	INR 5,000	
People's Choice Award	INR 5,000	
ISIE Future Award	Worth INR 5,000	

B.3.1 People's Choice Award

B.3.1.1 Judging Criteria

- B.3.1.1.1 Every team required to make a video of maximum 3 minutes which must show the manufacturing and testing of the vehicle.
- B.3.1.1.2 The team has to submit this video to ISIEINDIA through the mail or Drive Link. ISIEINDIA will upload this video on [ISIE YOUTUBE channel](#), [Linkedin](#), [Facebook](#) and [Instagram](#).
- B.3.1.1.3 The video having [maximum Views, Likes, Shares and Comments](#) (Sum of all Platforms) will be the winner of this round.

B.3.2 ISIE Future Award

- B.3.2.1 There is an Award for the best selected teams, each award worth INR 5,000. This amount will be given in form of discount coupon, scholarship in various national and international level conferences to selected team's member.
- B.3.2.2 No. of students from 1st year and 2nd year, No. of girl's participation will be also considered. Participation in ISIE activity by team e.g., organizing an event on college/local level, workshop and student chapter on their campus.
- B.3.2.3 Team Professionalism throughout the event, Team member coordination will also be considered.
- B.3.2.4 The organizers have completed right to give these awards to any team.

C TECHNICAL RULES

C.1 Vehicle Categories

ISIEINDIA has introduced two categories of Go-Kart for Indian Karting Racing. The categories are as follows:

C.1.1 Combustion Go-Kart (Engine Powered)

This category of vehicle is for the petrol heads, those who love the sound of the engine more than anything else. Those who are still enthusiastic about the traditional go-kart racing and get a rush by it. In this category, the teams will compete for each other in a go kart which houses, [Max. 165 cc engine](#). Teams will be using the engine of their choice, so it's up to them as for how they will extract more power from there. Engine bills Is mandatory to show during Technical Inspection.



Figure 1 Go Kart

C.1.2 Electric Go-Kart (Electric Powered)

Keeping in mind the major changes that automobile industry is going through, and the future of automobiles, we have introduced a new electric category to this event. In this category, the teams will compete with each other housing a motor of max. 6 KW motor, as driving unit of the vehicle.

C.2 Vehicle Requirement

C.2.1 Chassis Design Restrictions

C.2.1.1 Chassis Material

- ❖ Teams must use tubes falling under following criteria only
- ❖ Tube type: Seamless tubes.
- ❖ Outer Diameter: 1 inch to 2 inches
- ❖ Minimum Wall Thickness: 1.2 mm
- ❖ Material for tube: Steel/ Aluminum
- ❖ Cross section: Circular
- ❖ In case of steel, minimum carbon percentage should be 0.1%.

C.2.1.1.1 Teams must be able to present the material certificate (Physical and Chemical Properties) from certified labs, along with tube sizing.

C.2.1.1.2 Leaf Springs, Solid Bars, I-Bar, Rectangular Bar, or any other shape will result in immediate disqualification.

C.2.1.1.3 Also, the team should have at least one open end tube in the frame (this end must be capped).

C.2.1.1.4 In case team is using old chassis then recommendation from College/University is required verifying the material grade.

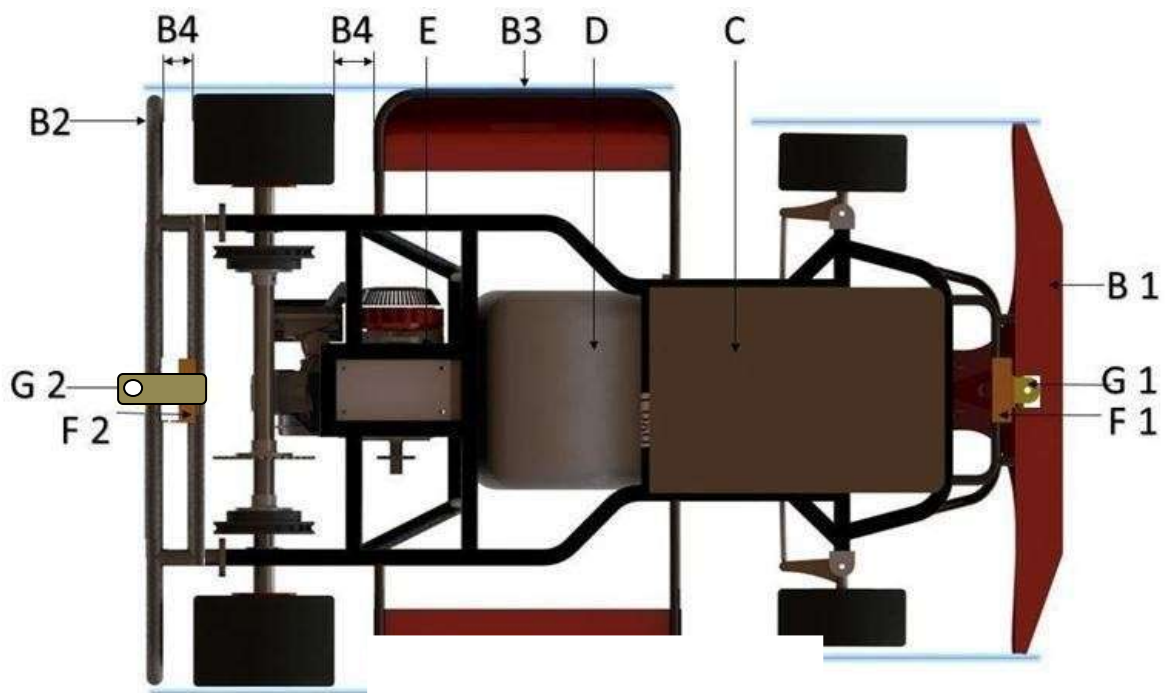


Fig: Demonstrated view of Kart

- ❖ B1- Front bumper / B2- Rear bumper / B3- Side bumper
- ❖ B4- Gap between tire and bumper must be at least 3 inches on either side
- ❖ C- Leg compartment
- ❖ F2- Rear jack point
- ❖ G1- Front Hitch point
- ❖ G2-Rear Hitch point
- ❖ D- Seat compartment
- ❖ E- Engine compartment
- ❖ F1- Front jack point

C.2.2 Ground Clearance:

C.2.2.1 Ground Clearance

Minimum 1 inch and maximum 5 inches (with driver inside). Ground clearance is measured from the lowest point (except tires) of the vehicle. No compensation like – chain sprocket, brake disc, will be allowed while checking ground clearance.

C.2.2.2 Maximum Turning Radius

Maximum turning radius allowed for all the teams is 3 m. This will be checked during the dynamic round at the time of cross pad.

C.2.3 Unstable Vehicle

Any vehicle exhibiting handling or other vehicle dynamics that are deemed unstable by the technical inspectors will not be permitted to participate in the dynamic events.

The decision of the Head of the Technical Committee of ISIEINDIA in this regard will be final and binding to all.

C.2.4 Jack Point

C.2.4.1 Teams must use two jack points. One at the front and other at the rear of the vehicle. The jack points must be painted **Yellow** in color.

C.2.4.2 The jack point must be oriented horizontally and perpendicular to the centerline of the car. The jack point should be made of a flat steel plate attached to the bottom of chassis.

C.2.4.3 Jack point must be – 12 inches (300 mm) long, 2 inches (50.8 mm) wide and 0.1968 inches (5mm) thick.

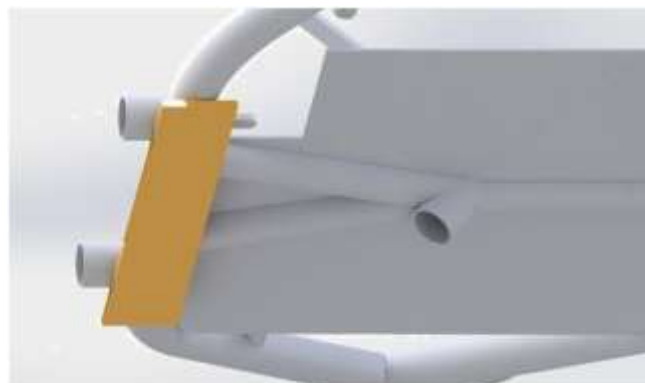


Figure 3 Jack Point

C.2.5 Hitch Point:

- C.2.5.1 Every vehicle must have two hitch point one at the rear end and other at the front end.
- C.2.5.2 Hitch point will be used to attach push rod.
- C.2.5.3 Every team will have to fabricate detachable push rod that should have the capability to push and pull the vehicle.
- C.2.5.4 It should be painted **Orange**.
- C.2.5.5 **It must have a hole diameter of 25.4 mm.**
- C.2.5.6 Hitch point should not be at the bumper. It should be mounted on the chassis only. Hitch point and jack points should be separate.
- C.2.5.7 **It should be easily accessible.**



Figure 4 Hitch point

C.2.6 Roll Hoop

- C.2.6.1 It is mandatory to have a roll hoop on driver's back.
- C.2.6.2 It should be made from one piece of pipe by using bends; the roll hoop should be made from **chassis material**. (Seamless)
- C.2.6.3 **No wrinkles are allowed on roll hoop in any case.**
- C.2.6.4 **Roll hoop cross section should be identical after bending.**
- C.2.6.5 It should be supported by trusses/bracers with the main frame at a height of at least 15 inches above the lower base of chassis on the hoop.
- C.2.6.6 Minimum height required for hoop is 3 inches above top most point of the helmet of the tallest driver seated on go-kart seat.
- C.2.6.7 Main Hoop braces must be constructed of closed section steel tubing.
- C.2.6.8 The Main Hoop must be supported by two braces extending in the forward or rearward direction on both the left and right sides of the Main Hoop.
- C.2.6.9 In the side view of the Frame, the Main Hoop and the Main Hoop braces must not lie on the same side of the vertical line through the top of the Main Hoop, i.e. if the Main Hoop leans forward, the braces must be forward of the Main Hoop, and if the Main Hoop leans rearward, the braces must be rearward of the Main Hoop.
- C.2.6.10 The Main Hoop braces must be straight, i.e. without any bends.

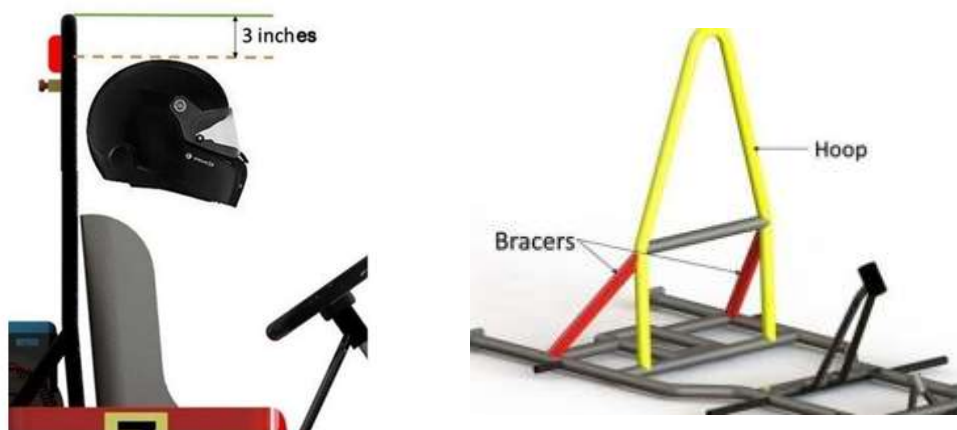


Figure 5 Roll hoop demonstration

C.2.7 Bumpers

- C.2.7.1 Bumpers must be installed in the **Front, Rear and Side** of the vehicle such that they cover the tires and protect them from **Front, Rear and Side** collision, which may occur during the dynamic events.
- C.2.7.2 Bumper should be made up of a single tube (seamless).
- C.2.7.3 Bumpers must be made up of the material used for chassis.

Tubes having joints will be discarded and the vehicle will not be given a TI OK.

- C.2.7.4 The bumper must consist of at least 2 steel elements i.e., the upper and lower tubular bar.
- C.2.7.5 Both bars being connected together by placing at least two members in between perpendicularly.
- C.2.7.6 Bumpers must be attached to the chassis-frame at least by 4 points.
- C.2.7.7 The bumpers must be covered with foam pipe insulation (if they are not surrounded by body works) so as to avoid injuries.

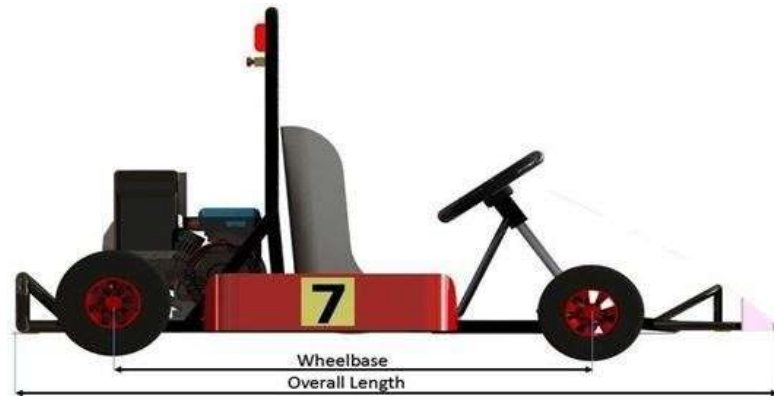
C.2.8 Wheels and Tires

- C.2.8.1 Number of wheels: 04
- C.2.8.2 Wheel alignment: Wheels should not be in a straight line in the longitudinal direction.
- C.2.8.3 Wheels Size:
- C.2.8.3.1 Teams must use tires as per the Table given below.
- C.2.8.3.2 Teams are not allowed to form any type of grooving or cut in the tires.

	Type	Category	Dimension
Dry (slick) tires	Front	D1	4.5×10.0-5
Wet tires	Front	W1 or W2	4.5×10.0-5
Dry (slick) tires	Rear	D1	7.1×11.0-5
Wet tires	Rear	W1 or W2	6.0×11.0-5

C.2.9 Wheel Base:

- C.2.9.1 The wheelbase is measured from the center of ground contact of the front and rear tires with the wheels pointed straight ahead.



C.2.9.2 Minimum wheel base of the kart must be 40 inches (1016.0mm)

C.2.10 Track Width

C.2.10.1 Smaller track width must be minimum 65% of the wheel base.

C.3 Driver's Compartment

C.3.1 Driver's Seat

C.3.1.1 Every team must use proper kart seat as shown in the figure below.

C.3.1.2 The seat mounting must have at least four Bolted Points and rigid enough to withstand the dynamic conditions. The driver seat should be at least 2 inches away from the firewall.

C.3.1.3 The longitudinal axis of the driver seat must be nearly same as that of the kart.

C.3.1.4 Driver's seat will be placed in this area which should be well protected having enough space for the driver to come out easily.



Figure 6 Driver Seat

C.3.2 Foot Guard

C.3.2.1 There must be a member for protecting foot of driver in form of plates, plane, pipes (as shown in figure with orange arrows) etc. such that at full throttle the driver's topmost point of the toe is secured and protected easily, the protection should be stable and stiff and should not be made by panel materials like pp sheet.

C.3.2.2 It should not be mounted on bumpers.



Figure 7 Foot Guard

C.3.3 Kart Stand

Kart Stand is essentially required during the Final Round. The design of the stand can be anything but it must be able to move when pushed or pulled; also care should be taken to restrict its motion whenever needed. The minimum height of the stand from the ground must be not less than 36 inches. It must be painted with Red Color. During every static activity, the kart will be placed on the stand only.



Figure 8 Kart Stand

C.3.4 Driver's Visibility

- C.3.4.1 The driver must have adequate visibility to the front and sides of the kart.
- C.3.4.2 With the driver seated in a normal driving position, he/she must have a minimum two hundred degrees (200°) field of vision and minimum one hundred degrees (100°) to either side of the driver.
- C.3.4.3 The driver's view should not be restricted by steering wheel position.

C.3.5 Firewall

- C.3.5.1 The firewall should separate all the Fuel Line System, Engine, Motor and Electrical Connections from the driver.
- C.3.5.2 The firewall must separate the electrical transmission from the driver.
- C.3.5.3 For rear mount and side mount engine, driver seat should be completely insulated from the same, also the Firewall should be Minimum up to the tallest driver upper neck point.
- C.3.5.4 For side mount engine, the firewall also be provided between driver seat, engine and on the main hoop.
- C.3.5.5 The firewall should be free from holes, drills, open patches etc. it should be a complete Separable sheet which divides driver and engine/battery compartment separately.

- C.3.5.6 The firewall(s) must be a rigid, non-permeable surface made from 1.5 mm or thicker aluminum or proven equivalent.
- C.3.5.7 The firewall(s) must seal completely against the passage of fluids and hot gasses, including driver's back, left-right sides and the floor of the cockpit. There can be no holes in a firewall. Use of glass wool, any other non-standard none approved material should not be used. From firewall, the driver should be minimum 2 inches away in all directions.
- C.3.5.8 Making any type of mounting for a kill switch, brake light, fire extinguisher, seat etc. and any unwanted cut on fire wall is strictly prohibited.

C.3.6 Steering

C.3.6.1 Steering Mechanism

- C.3.6.1.1 Teams can use any type of mechanical steering mechanism. (Rack and Pinion/ Steer by wire is excluded).
- C.3.6.1.2 The steering wheel must be mechanically connected to the wheels, i.e. "steer-by-wire" or electrically actuated steering is prohibited.
- C.3.6.1.3 All parts of steering system (steering column, track rod, tie rod, etc.) must be of metal except Steering wheel.
- C.3.6.1.4 Carbon fiber, nylon, plastic etc. are not allowed.

C.3.6.2 Steering Wheel

- C.3.6.2.1 The steering wheel must have a continuous perimeter that is near circular or near oval, i.e. the outer perimeter profile can have some straight sections, but no concave sections. "H" or cut-out wheels are not allowed.
- C.3.6.2.2 Allowable steering system free play is limited to Seven degrees (7°) total measured at the Steering wheel.

C.3.6.3 Minimum dimension of steering wheel

- C.3.6.3.1 Full circle: outer diameter (O.D) of 10 inches
- C.3.6.3.2 Elliptical: Major axis diameter of 10 inches and minor axis diameter of 8 inches.

C.3.6.4 Steering Lock

- C.3.6.4.1 The steering system must have positive steering stops that prevent the steering linkages from locking up (the inversion of a four-bar linkage at one of the pivots).
- C.3.6.4.2 The stops may be placed on the uprights and must prevent the tires from contacting body, or frame members during the track events.

C.3.7 Braking

C.3.7.1 Braking System

- C.3.7.1.1 Teams must use the hydraulic braking system. "Brake-by-wire" systems are prohibited.
- C.3.7.1.2 The brakes must be able to act on both the rear wheels.
- C.3.7.1.3 The hydraulic circuit must have its own fluid reservoir, either by use of separate reservoirs or by the use of a dammed, OEM-style reservoir.
- C.3.7.1.4 **Team must use steel braided brake hose and brake lines.**



Figure 9 Brake Lines

C.3.7.2 Brake Pedals

- C.3.7.2.1 The brake pedal must be fabricated from steel or aluminum or machined from steel, Aluminum or Titanium.
- C.3.7.2.2 Pedal should only be operated from driver's foot and use of hand operated levers for braking mechanism is not allowed.
- C.3.7.2.3 Teams need to submit the report of calculation, Selection of Material, and safety of brake pedal.
- C.3.7.2.4 There should not be free play at pedals.

C.3.7.3 Pedal Locks

- C.3.7.3.1 The pedal travel should be restricted to some distance by some kind of locking mechanisms.

C.3.7.4 Brake over travel Switch

- C.3.7.4.1 A brake pedal over-travel switch must be installed on the car as part of the shutdown system and wired in series with the shutdown buttons. This switch must be installed so that in the event of brake system failure such that the brake pedals over travels, it will result in the shutdown of the system, which will eventually help controlling the system.



Figure 10 Brake Over Travel Switch

C.3.7.5 Brake Light

- C.3.7.5.1 The kart must be equipped with a red color brake light.
- C.3.7.5.2 The brake light itself must be rectangular, triangular or near round shape with a minimum shining surface of at least 15 cm sq.
- C.3.7.5.3 Each brake light must be clearly visible from the rear in very bright sunlight. It must be on the top-center of Roll hoop as shown in the figure below.

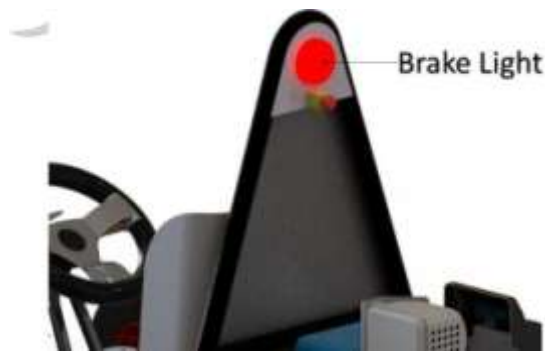


Figure 11 Brake light

C.4 Transmission and Power Unit

C.4.1 Transmission

- C.4.1.1.1 The transmission to be used in the Go-Karts must be of rear wheel drive only.
- C.4.1.1.2 The teams are free to use any type of transmission system – gear box/ CVT/ Chain and sprocket attached to a centrifugal clutch.
- C.4.1.1.3 The teams are free to use any sort of designs i.e. the use of differential, through the axle, the wheel mounting hub or by any other means.
- C.4.1.1.4 There is no limitation with the sprocket ratio installed in the kart. Teams are allowed to make changes to the sprocket ratio as per the requirements.
- C.4.1.1.5 Team must submit the calculation report for the selection of sprocket ratio.

C.4.2 Engine

C.4.2.1 Engine Specification

- C.4.2.1.1 Engine Type: Single cylinder, four strokes, air cooled/liquid cooled
- C.4.2.1.2 Fuel Type: Petrol
- C.4.2.1.3 Maximum Capacity: 165 cc

Teams are free to use the engine of their choice, given it fulfills the condition provided above. Also, the teams must be able to provide a valid engine number and engine Registration Certificate during engine registration.

- C.4.2.2 Engine Manipulation: During the final round technical inspector checks governor setting and mention the same RPM for all go-kart. The governor setting once set, teams are not allowed to manipulate/ change.
- C.4.2.3 Engine Usage: One engine can be used for 2 consecutive events. For teams procuring new engine this year can use it again for next year.

Teams must be able to show a properly dated bill during the event, as proof of engine procurement.

C.4.3 Muffler and Exhaust

- C.4.3.1 The teams must keep in mind that they should select the appropriate exhaust system. In order to

reduce the noise, efficient exhaust silencers are compulsory.

C.4.3.2 It should be mounted on chassis or with support to chassis member only.

C.4.3.3 The exhaust system must be properly shielded preventing the delicate parts, which may get affected if exposed to the heat.

C.4.3.4 The exhaust must be mounted properly to avoid the physical contacts of the viewers or the technical inspectors.

C.4.3.5 The exhaust must be routed so that the driver is not subjected to fumes at any speed considering the draft of the vehicle.

C.4.3.6 Shielding to exhaust pipe with cotton rope, jute rope is strictly prohibited.

C.4.4 Engine and Battery Compartment

C.4.4.1 This area holds the power house of the Go-Kart.

C.4.4.2 This area should be well equipped to hold the heavy components of the Go-Kart.

C.4.4.3 Engine or Battery can be placed in the left or right of the driver compartment or behind the roll hoop, but it should be properly covered with the firewall and should meet the requirement of rule C 3.5



Figure 12 Engine and Battery Compartment

C.4.5 Engine Tuning

For teams participating in engine category, they are allowed to tune their engines. Teams must keep in check that the engine tuning should not affect the engine capacity in any way.

C.4.6 Fuel Tank (For Combustion Category)

C.4.6.1 Replacement of fuel tank or doing any change in the fuel tank and its position is strictly prohibited.

C.4.6.2 Fuel tank must not be covered with any external material so that fuel can be easily filled in it by Stewards or Marshals.

C.4.6.3 Fuel tank capacity: Max. 05 Liters

C.4.7 Fuel Tank Spill over prevention and Drain

C.4.7.1 Every vehicle must have a spill over prevention container mounted on the top of the fuel tank which should prevent the fuel being accidentally spilling on any part of the engine or exhaust.

C.4.7.2 The sidewalls of the spillover tank should be at least 3 inches in height. The spillover tank should be manufactured and mounted properly.

- C.4.7.3 The fuel in the spillover tank must be transported to the ground by the use of proper drain linings. Drain lining could be a fuel line material or any pipe.
- C.4.7.4 Drain lining should be directed towards the ground with the rigid support of the frame with proper nylon ties.

C.4.8 Fuel Tank Position

- C.4.8.1 For teams using Briggs and Stratton engine or Honda engine can use the fuel tank provided with the engine.
- C.4.8.2 For teams using any other engine, like that of some motorbike or other two-wheeler, they must use a rectangular/cylindrical shaped tank made of plastic/steel.
- C.4.8.3 The tank must be placed at least, 150 mm distance from the engine.
- C.4.8.4 The tank must be provided with a spill over prevention system as mentioned above in section.

C.4.9 Venting System

- C.4.9.1 The fuel tank and carburetor venting systems must be designed such that fuel cannot spill during hard cornering or acceleration.
- C.4.9.2 All fuel vent lines must be equipped with a check valve to prevent fuel leakage when the tank is inverted.

C.4.10 Motor Unit

C.4.10.1 Motor Specification

- C.4.10.1.1 Teams participating in Electric Category, They must use the motor of the following specification:
- ❖ Motor Type: DC/AC Maximum Rated Power: 6 KW (Peak Power: 10 KW)
 - ❖ Maximum Rated Voltage: 144V
- C.4.10.1.2 The Motor must be manufactured as per the IEC 60529 IP67. Teams are required to submit the certificate of IEC 60529 IP67 from their vender.
- C.4.10.1.3 The Power rating of the motor will be strictly inspected in the technical inspection.
- C.4.10.1.4 Motor and Motor Controller should be tuned properly.
- C.4.10.1.5 Teams must submit the Power Curve & Torque Curve at the time of Technical Inspection.
- C.4.10.1.6 Selection of power rating should be according to design and calculation of required power requirements of the vehicle.
- C.4.10.1.7 Teams need to submit the Motor Selection Report at the time of Technical Inspection.
- C.4.10.1.8 Any changes in the motor will lead to disqualification on the spot.
- C.4.10.1.9 The motor should be safely fastened (using nut and bolt).
- C.4.10.1.10 The motor and the drive train should be shielded properly.

Note: The motor must not deliver power more than 6 KW at any time during any event. Maximum voltage, which can be used, is limited to 144V only. Teams are free to use any type of motors and controllers compatible with them without compromising these boundary conditions.

C.4.11 Controller

- C.4.11.1 Controller must provide over & low voltage protection, over temperature protection, over current protection & brake protection to motor.

C.4.11.2 The controller voltage should match the voltage of battery and motor. The controller current rating should be lower or equal to the continuous current output of battery. The system should be designed in such a way that all the components are properly tuned with each other.

C.4.12 Battery Unit

C.4.12.1 Battery Specification

C.4.12.1.1 Teams are allowed to use pre-manufactured battery pack available in the market, Self Manufactured battery pack is prohibited.

C.4.12.1.2 The teams can use either of the following of types of the batteries – SMF, Li-ion.

C.4.12.1.3 Battery pack should be AIS048 & IEC 60529 IP67 certified

C.4.12.1.4 If team is using old battery pack, you need to submit the Battery Health Certificate.

C.4.12.1.5 Teams must use a battery of the following configuration:

- ❖ Maximum Rated voltage: 144V
- ❖ Maximum Capacity: 150AH

C.4.12.2 Battery Management System

C.4.12.2.1 The BMS must provide full cell protection to cover almost any eventuality.

C.4.12.2.2 BMS must provide over charge & over discharge protection while charging & discharging, over current protection, over temperature & under temperature protection, short circuit protection, reverse polarity protection and cell balancing functions.

C.4.12.2.3 Operating a battery outside of its specified design limits of the battery management system will lead to disqualification.

C.4.12.2.4 Proper approval certifications should be presented to the IKR team during the technical inspection.

C.4.12.3 Battery Pack Casing and Compartment

C.4.12.3.1 There should be separate battery pack compartment and battery pack casing enclosure.

C.4.12.3.2 The battery pack casing should be made up of rigid plastic/glass fiber/ sheet metal, with an insulating coating.

C.4.12.3.3 The cover material of Battery Pack must be fire and electric proof and properly insulated.

C.4.12.3.4 Battery compartment must be designed and manufactured by the teams.

C.4.12.3.5 The compartment must be rigidly mounted on chassis using welds/fastened (using lock nuts). Nylon ties, strings or wire of any kind is not allowed for mounting.

C.4.12.3.6 Team can use forced convection system such that air from the atmosphere is forced into the battery pack compartment for cooling purpose.

C.4.12.3.7 Liquid cooling of battery pack is prohibited.

(Note: Battery Pack with casing must be installed inside the battery pack compartment for easy removal)

C.4.12.4 Battery Position

C.4.12.4.1 The battery pack must be mounted such that it can be swapped anytime whenever needed.

C.4.12.4.2 Battery position should be in such a way that, removal of battery from battery compartment works clean & safe.

C.4.12.5 Charger

- C.4.12.5.1 Teams must have a single point accessible charging point.
- C.4.12.5.2 Teams should have a charging connector for charging the batteries as per the charger specifications.
- C.4.12.5.3 Teams need to submit the datasheet for Charger & Charging Connector at the time of Technical Inspection.

C.4.12.6 Battery Safety

- C.4.12.6.1 Teams are required to follow International Electro technical Commission IEC 60529 IP67.
- C.4.12.6.2 The Battery must be manufactured as per the IEC 60529 IP67 and should be AIS 048 or AIS 156 certified (as per the application of battery).
- C.4.12.6.3 Team must understand the AIS standards and its significance.
- C.4.12.6.4 If power storage pack is capable of spilling dangerous liquids when damaged, there must be a spill-proof barrier between that storage pack and kart occupants.
- C.4.12.6.5 If power storage pack is capable of emitting dangerous gasses when damaged, there must be a proper ventilation system designed.
- C.4.12.6.6 The battery pack must have a proper short circuit protection. Teams should use good quality working Mini circuit breakers (MCB) for protecting it from high loads.
- C.4.12.6.7 The current rating of MCB should not be greater than the cable current carrying capacity. It should be greater than or equal to the maximum current that the system is carrying. Do not use a MCB lower than the total current of the circuit.
- C.4.12.6.8 Team should choose MCB as per the vehicle requirement and must understand the MCB ratings.
- C.4.12.6.9 The current rating of the MCB should be equal to or greater than the Motor Controller rating.
- C.4.12.6.10 None of the battery parts or wires should be exposed to any body part of the driver.

C.4.13 Throttle Paddle

- C.4.13.1 Only foot operated paddle is allowed (Hand operated lever not allowed). There should be a positive lock provided with the throttle paddle.
- C.4.13.2 This throttle stopper should be placed such that the throttle wire is not over stressed and before the max motion of the throttle the stopper should restrict the paddle.
- C.4.13.3 Teams need to submit the report of calculation, Selection of Material, and safety of throttle.

C.4.14 Scatter Shield

- C.4.14.1 The team must use scatter shield for covering chain, sprocket etc. It must be rigidly mounted to chassis but not with any moving part of the kart.
- C.4.14.2 It can be of the metal net but capable to prevent scattering of small parts of the transmission system. Exposed high-speed final drive train equipment such as Continuously Variable Transmissions (CVTs), differential, sprockets, gears, pulleys, torque converters, clutches, belt drives and clutch drives, must be fitted with scatter shields in case of failure.



Figure 13 Scatter Shield

C.4.15 Safety Measurements

C.4.15.1 Kill Switch

- C.4.15.1.1 There should be three kill switches in the Go-Kart.
- C.4.15.1.2 They should be placed in such a way that one can be easily accessed by the driver and other two should be mounted on either side of roll hoop.
- C.4.15.1.3 Kill switch must be of bright red color so that it can be clearly visible from a long distance.
- C.4.15.1.4 It should be a push to off type, it should not be a simple push button which retraces after the button is pressed.
- C.4.15.1.5 The kill switch used should be as shown in the figure below.
- C.4.15.1.6 Home appliance switches should not be used as kill switches.



Figure 14 Kill switch

C.4.15.2 Kill Switch Mounting

- C.4.15.2.1 The kill switch must be installed properly and rigidly in a case.
- C.4.15.2.2 Mounting the kill switch with plastic/metallic ties or wires is strictly prohibited. Mounting of kill switch on fire wall of roll hoop is strictly prohibited.
- C.4.15.2.3 Kill switch mounted over the roll hoop must be placed using clamps.



Figure 15 Kill switch Mounting

C.4.15.3 Kill Switch Sticker

There must be a sticker, on which kill switch is written with arrow sign in red color, showing the position of the kill switch.



C.4.15.4 Fusing

- C.4.15.4.1 All electrical systems must be appropriately fused. Batteries should be shielded properly from the driver.
- C.4.15.4.2 Battery terminal should be insulated using proper battery plastic caps or by gel, use of tapes, cardboard or plastic sheet, rubber sheet or insulation tape is not allowed.
- C.4.15.4.3 Since the battery has very low internal impedance, instantaneous high currents can flow which can seriously damage the battery.
- C.4.15.4.4 Teams should mandatorily use an MCB (mini circuit breaker) which should be instantaneously able to isolate the battery from the other electronic devices to protect the battery from an overload.
- C.4.15.4.5 The current rating of fuse should be greater (15% to 20%) than the current carrying through the wire on which it is installed.
- C.4.15.4.6 The fuse holder must be rigidly mounted on the chassis.
- C.4.15.4.7 The tractive system must be appropriately fused.

C.4.15.5 Wire Insulation

- C.4.15.5.1 All the electrical wire should be harnessed properly with plastic tubes, spiral rolls, rubber sleeves such that the wires are not exposed.
- C.4.15.5.2 Proper joining method should be used for wires, simple plastic tapes, insulation tapes are not allowed, wires should be routed through the chassis or non-moving member.

C.4.15.6 Fire Extinguishers

- C.4.15.6.1 The team must have 2 fire extinguishers each of 1 kg.
- C.4.15.6.2 At least one must be rigidly mounted in driver sitting compartment and other must be in hand of a team member in every static and dynamic test during the final round. The fire extinguisher should not be mounted on the firewall.
- C.4.15.6.3 It should be in seat compartment only in such a way that driver can easily access to it while seated in a kart.

C.4.15.7 First Aid Box

- C.4.15.7.1 Every team must have their own first aid box to be used in emergency during the dynamic round.

C.4.15.8 Goggles

- C.4.15.8.1 Every team should have their own goggles to use during welding and grinding.

C.4.16 Fasteners

C.4.16.1 Fastener Grade Requirements

C.4.16.1.1 All threaded fasteners utilized in the driver's cell structure, steering, braking and mountings must meet or exceed, SAE Grade 5, Metric Grade 8.8 and/or AN/MS specifications.

C.4.16.1.2 The use of button head cap, pan head, flat head or round head screws or bolts in any location in the following systems is prohibited:

- ❖ Driver's cell structure,
- ❖ Steering system
- ❖ Brake system
- ❖ Compartments and Mountings

C.4.16.2 Lock Nut

C.4.16.2.1 The team must use lock nut in the wheel assembly, steering mounting, Power unit and transmission mounting.

Note: Use of any type of plastic or metal tie (such as zip tie, wrap tie, twist tie, wire etc.) for fixing body parts or any components of kart are strictly not allowed.



Figure 16 Lock nut

C.4.16.3 Fast Nuts

C.4.16.3.1 It is mandatory to use only metal fast nuts and bolts for body works etc.

C.4.16.4 Mountings

C.4.16.4.1 All the mountings of the steering system, braking system (except brake light), engine & transmission system, body works (including firewall) must be of metal.

C.4.16.5 Seat Belt

C.4.16.5.1 The seat belt is not allowed for this event.

C.4.17 Body Works

C.4.17.1 Sharp edges on the body work other protruding components are prohibited.

C.4.17.2 It must cover from front bumper to steering wheel so that any outer material or debris from the track (pebbles, small mechanical components etc.) cannot strike or reach seat Compartment.

C.4.17.3 Teams are free to design their own bodyworks and it should be rigid. Flexible bodyworks is not allowed.

C.4.18 Outer Bodyworks

- C.4.18.1 Every team must have a minimum amount of body work as shown in the figure below.
- C.4.18.2 Front body work (Similar to that in front view).
- C.4.18.3 Left and Right-side body work (Similar to that shown in the left and rear front view).Rear bodywork (Similar to that shown in rear view).

Teams are not allowed to use full round type bumpers as shown in the figure below. The bumpers used should be at least 5 inches height from the lower base of the chassis.



Figure 17 Bodyworks view

C.4.19 Floor Closeout

- C.4.19.1 All Go-Karts must have a floor close-out made of one or more panels, which separate the driver from the pavement of the chassis.
- C.4.19.2 Small gaps should not exceed more than 3 mm, also the close out should be capable of taking drivers load while he stands, egress & moves out of the kart, non-rigid close outs will not be entertained.
- C.4.19.3 It must prevent track debris to enter the kart.

Note: Floor close out should start from firewall of roll hoop and should be up to the front most part

C.4.20 Compulsory Advertisement

- C.4.20.1 Before coming to Final Round all the teams compulsorily need to paste Kart Number stickers on the front body panel, both sides and rear bumper body work as shown in the figure below. For team number stickers: Diameter: 6 inches Background color: White Text color: Black Shape: Circular The text should be placed such as that it is visible clearly from the distance of 10 m.
- C.4.20.2 ISIEINDIA logo: Teams must leave a space of 8 inches x 4 inches at the front.
- C.4.20.3 IKR logo: Teams must leave a space of 8 inches x 4 inches at the front.
- C.4.20.4 FMSCI logo: Teams must leave a space of 8 inches x 4 inches at the front.
- C.4.20.5 For sponsors: Teams can place sponsors logo at the side body.
- C.4.20.6 College Logo: Teams must place team logo and college logo in the front. ISIEINDIA and IKR logos are to be placed as per figure below.



D DYNAMIC ROUND

D.1 Dynamic Round Registration

Dynamic Round is the final stage of the event, which is set up to check the vehicle on various parameters, including the final endurance race. In this stage, the teams have to pass various rounds, before entering into the endurance round. These rounds will test the vehicle on various parameters – such as maneuverability, braking, acceleration, hill climb, the technical aspect of the vehicle, the safety aspect of the vehicle, etc.

Teams will enter the dynamic round by registering themselves at the help desk. During registration, teams are to submit several documents.

D.2 Documents to submit at helpdesk

- ❖ Final design and manufacturing report.
- ❖ Business plan report and power point presentation.
- ❖ Innovation report and video.
- ❖ Copy of all Team member's College/University I-card or any document recognizing that they are a student of that College/ University.
- ❖ Copy of Team Faculty advisor College/University I-card or any document recognizing that he/she is a faculty of that College/ University. (if present) Copy of Blood group report of Captains & Drivers.
- ❖ Driver's driving license and medical insurance copy.

D.3 Briefings

The participants and drivers briefing is a meeting organized by the organizing committee of the course for all participants and drivers entered in the event.

D.3.1 The aim of Briefing

- ❖ To remind participants and drivers of the specific points of the rules and regulations concerning the organization of the event.
- ❖ To remind them of the safety notions, either general or specific to the circuit used. To give any clarification concerning the interpretation of the regulations.
- ❖ The time of the briefing will be mentioned in the schedule of the final round.
- ❖ During the briefing, no member can exit or enter in briefing hall. The extra meeting may be organized.

- ❖ The presence of all concerned participants and drivers is mandatory throughout the briefing under pain of a sanction or even of a possible exclusion from the event.
- ❖ Two attendance sheets shall be signed, one by drivers and other by participants.
- ❖ If any team fails to attend the Briefing, then they are disqualified from the Final event. This disqualification can prevent by taking permission to attend the special briefing. But by paying a mandatory fine INR 5000 per team.
- ❖ This fine can be paid to stewards for hosting a special briefing.

D.3.2 Photo session/ Media Interview

- ❖ There will be a photo session of event Guests, Stewards, scrutineer, marshals, teams captain, Team driver etc.
- ❖ All team's captain must present in formal dress for Teams captain photo shoot.
- ❖ All drivers (both or only one) of the team must present in full driver safety kit for driver's photo shoot.

D.4 Static Events:

D.4.1 Technical Inspection (T.I)

- D.4.1.1 Technical inspection is done to check whether the Kart is able to participate safely and reliably in the event.
- D.4.1.2 T.I will also check for compliance with the Rule book. There are no points for this round. Each team must qualify this round.
- D.4.1.3 The technical inspection will conduct a series of stages. Each stage will check each aspect of the Kart. In each stage, one or more specialists from that department will be there. He / She will scrutinize the Kart.

D.4.2 Egress Test:

The driver should be able to make egress within 5 seconds (time will be counted when the vehicle is static and the driver is in seating position, time ends when the driver is completely out of the vehicle and standing on the ground).

- D.4.2.1 Teams have to clear all the stages of the Technical Inspection. Stages are listed below.

- ❖ Safety
- ❖ Weight and dimensional Test
- ❖ Vision test Structural reliability and design
- ❖ Steering, Braking, Engine & Transmission
- ❖ Egress Test
- ❖ Cost Report and Bills

- D.4.2.2 Only five members are allowed per team during T.I. Team caption and one of the drivers must be present in full driver safety kit. It is team's responsibility to bring all the documents during T.I which includes the following data.

- ❖ Driver's license (original)
- ❖ Insurance documents (original)
- ❖ Blood group report of both drivers and captain (original)
- ❖ Complete reports including design report

- ❖ Each Kart must pass all parts of technical inspection and testing before it is permitted to participate in any dynamic event. The exact procedures and instruments employed for inspection and testing are entirely at the discretion of the Chief Scrutinizer.
- ❖ Visible access can be provided by removing body panels or by providing removable access panels to check the various components.
- ❖ Karts must be presented for technical inspection in finished condition, i.e. fully assembled, complete and ready-to-run. Scrutinizer will not inspect any Go-Kart presented for inspection in an unfinished state.

D.4.3 Corrections

- D.4.3.1 If a Go-Kart is deemed to a concern or does not comply with the rules, then a correction must be done to get re-inspected.
- D.4.3.2 Use of mechanical application (cutting, grinding, drilling, welding etc.) for correcting/ repairing kart can only be done in the Hot Pit provided.
- D.4.3.3 No team will be allowed to perform any mechanical process at Pit. Only 2 attempts will be given to clear their Technical Inspection.
- D.4.3.4 Within given time duration teams have to qualify T.I using their both chances. Its team owns the responsibility to line up and qualify Technical Inspection.
- D.4.3.5 Once the Kart passes the T.I no modifications are allowed. If any Kart found modified will be disqualified. Teams should go through the entire check list in the T.I sheets, prior to the final round to prevent disqualifications.

Note-If any team fails to qualify Technical Inspection by scrutinizer, then they can only participate in static events but not in any of the dynamic events.

D.4.4 Weight Test

- D.4.4.1 The weight of the Go-Kart should not exceed more than 130 kg without a driver.
- D.4.4.2 It can be check by putting all 4 wheels upon 4 weighing machines (each wheel on each weight machine) and adding all displaying values from each weight machine.

D.4.5 Design report Vs. Manufactured Go-Kart

- D.4.5.1 The objective of the design event is to evaluate the engineering effort that went into the design of the kart.
- D.4.5.2 The teams are also checked on the basis of how the engineering meets the intent of the market.
- D.4.5.3 The kart that illustrates the best use of engineering to meet the design goals and the best understanding of the design by the team members will win the Best Design Award.
- D.4.5.4 In the design report to be submitted, the document should contain a brief description of the Go-Kart with the majority of the report specifically addressing only the engineering, design features, and Go-Kart concepts new for this year's event.
- D.4.5.5 It can also contain various analysis reports; blue prints of self-manufactured parts and evidence must be brought up for the Scrutinizer to check.
- D.4.5.6 The Scrutinizers will evaluate the engineering effort based upon the team's design report, responses

to questions and an inspection of the kart.

- D.4.5.7 The design Scrutinizer will inspect the kart to determine if the design concepts are adequate and appropriate for the application.
- D.4.5.8 Maximum Point for this round is 100.

D.4.6 B-Plan and Cost Analysis Presentation:

- D.4.6.1 This is a presentation based around. Each team has to prepare a presentation about how they can market their Kart and how they are surveying the market for maximum profit if they commercialize their Kart.
- D.4.6.2 They also have to submit their business plan report. Each team will have 15 min for presentation.
- D.4.6.3 The presentation should not be more than 15 slides. Best business plan award will be selected from this round. This round has 100 points.
- D.4.6.4 In this report, the cost of the components used in the Go-Kart must be specified. It is cross checked with the Go-Kart to ensure every component and system is present. The actual cost must not vary with that in the report.

D.4.7 Innovation Round:

- D.4.7.1 In this round scrutinizer will check team's new ideas. Judges may question anyone in the teams regarding their Kart's innovation.
- D.4.7.2 It is not a compulsory round, however, points from this round will be used to calculate the Overall winners. This round carries a maximum of 100 points.
- D.4.7.3 Since it is static round, it will be held right after the technical inspection under the specified Pit allotted to teams.
- D.4.7.4 Teams are advised to prepare separate reports for each of the awards so that it will be easy for the scrutinizers to evaluate.

D.5 Dynamic Events

D.5.1 Brake Test

- D.5.1.1 All the Go-Karts have to pass the brake test to participate in dynamic events. The Go-Kart must stop in a straight line after the brake is applied on the Go-Kart.
- D.5.1.2 Each Go-Kart will be given 2 attempts to pass the brake test. But in case if the Go- Kart passes the test in the first attempt it will not be given any other trials.
- D.5.1.3 Teams have to clear the braking test. Brake Test does not have any points, but it is mandatory for the teams to qualify this round to participate in the dynamic round.
- D.5.1.4 The teams will be given a stretch of 50 m to accelerate their vehicle and achieve a minimum speed of 40 kmph, and then they will have a braking zone of 5 m.
- D.5.1.5 As soon as the front of the vehicle touches starting line of braking zone the brakes are to be applied.
- D.5.1.6 The rear wheels should lock as soon as the brake is applied. The teams must not overshoot the braking zone.
- D.5.1.7 The vehicle must not deviate more than 10 degrees from its traveling line.

D.5.2 Acceleration Test

D.5.2.1 The acceleration event evaluates the Go-Kart's acceleration in a straight line on the flat pavement.

D.5.2.2 Procedure

D.5.2.2.1 The karts will accelerate from a standing start over a distance of 50 m on a flat surface.

D.5.2.2.2 The foremost part of the Go-Kart will be staged at exactly behind the starting line. The time taken to accelerate would be measured.

D.5.2.3 Scoring

D.5.2.3.1 The acceleration score is based upon the corrected elapsed time. Elapsed time will be measured from the time the karts cross the starting line until it crosses the finish line.

D.5.2.3.2 Scoring formula: $200 \times [(T_{\text{longest}} - T_{\text{shortest}}) / (T_{\text{longest}} - T_{\text{shortest}})]$

D.5.2.4 Penalty

D.5.2.4.1 Comes Down or Out (DOO): A two second (2 sec) penalty will be added for each DOO (including entry and exit gate cones) that occurred on that particular run to give the corrected elapsed time.

D.5.2.4.2 Did Not Attempt (DNA): If the Go-Kart did not attempt or if it does not complete the event, then those teams would receive DNA.

D.5.3 Cross Pad

D.5.3.1 In this round, the Kart should be driven through a track specified by the organizers.

D.5.3.2 This round checks the maneuverability of Kart, to measure the Kart's cornering ability on a flat surface while making a constant-radius turn and driver's skill.

D.5.3.3 Cross Pad Layout

D.5.3.3.1 The Track layout will be decided by the OC and judging panel at the time of event.

D.5.3.4 Procedure

D.5.3.4.1 The track is laid as shown above and the Go-Karts will enter the track perpendicular to the figure eight. They must take one full lap on the right circle to establish the turn and the Go-Kart must move on to the left circle to complete the lap. This completes one lap.

D.5.3.4.2 After that Kart have to move for multiple movements on either side path and revolve about the center cone. Finally, Kart will move to the exit gate.

D.5.3.4.3 The driver has to stop his/her kart within 10m after exit gate.

D.5.3.4.4 A driver has the option to take a second run immediately after the first.

D.5.3.4.5 Scoring formula: $400 \times [(T_{\text{longest}} - T_{\text{yours}}) / (T_{\text{longest}} - T_{\text{shortest}})]$

Note: Each team may make two (2) attempts but with different drivers. Scoring will be based on the better of the two attempts.

D.5.3.5 Penalties

D.5.3.5.1 Cones Out/touch- A penalty of 1 second will be added to the time for every one that is knocked out/touch (including gate cones).

- D.5.3.5.2 Cone Down- A penalty of 2 seconds will be added to the time for every one that is knocked down (including gate cones).
- D.5.3.5.3 Missing cone- A penalty of 5 seconds will be added for missing a cone during multiple movements on either side path and 10 sec for missing center cone.
- D.5.3.5.4 Unfinished- Go-Karts that has gone out of the track will continue as long as they have not gone off course will be classified as Unfinished.
- D.5.3.5.5 Incorrect Laps- Go-Karts that do not follow procedure, i.e. run an incorrect number of laps or run the Laps in the wrong sequence will also be classified as unfinished.
- D.5.3.5.6 Tire touch/hit- A penalty of 50 points will be added if the driver doesn't stop the kart within 10 m after exit gate.
- D.5.3.5.7 Skid-A penalty of 50 points will be added if the driver intentionally skids/drift the kart after exit gate.

D.5.4 Endurance Round

- D.5.4.1 The endurance event is designed to evaluate the Go-Kart's overall performance, reliability, and efficiency.

D.5.4.2 Procedure & Specifications:

- D.5.4.2.1 In general, the team completing the laps in the shortest time will earn the maximum points available for this event. The endurance distance is approximately 30km (18.641miles). Driver changes will be made after completion of 15 km. Also 4 wheel to wheel racing is prohibited. Passing another Go-Kart may only be done in an established passing zone.
- D.5.4.2.2 Course speeds can be estimated by the following course specifications. Average speed should be around 45 km/hr. (28 mph) with top speeds of approximately 70 km/hr.

D.5.4.3 Race Track

- D.5.4.3.1 Teams can see a racing track with dimension on web site soon/ will be intimated through mail.
- D.5.4.3.2 Scoring formula: $500 \times [(T_{\text{longest}} - T_{\text{yours}}) / (T_{\text{longest}} - T_{\text{shortest}})]$

D.5.4.4 Inexperienced Driver

- D.5.4.4.1 The Chief Marshal/Director of Operations may disqualify a driver if the driver is too slow, too aggressive, or driving in a manner that, in the sole opinion of the event officials, demonstrates an inability to properly control their Go-Kart.
- D.5.4.4.2 This will result in a Did Not Finish (DNF) for the event.

D.5.4.5 Endurance Go-Kart Restarting

- D.5.4.5.1 The Go-Kart must be capable of restarting at all-time once the Go-Kart has begun the event. Marshal will assist if there is a problem in engine starting. No team members are allowed on track.
- D.5.4.5.2 If Go-Kart stops on the track, some time will be given and if the kart is not able to restart. DNF will be given.

D.5.5 Flags

There are two types of flags which are command flags & Informational flags. The command flags command the teams and they must obey without any question while the informational flags give us information to guide along the laps.

D.5.5.1 Command Flags

- D.5.5.1.1 Black Flag - Pull into the penalty box for discussion with the director of Operations or another official concerning an incident. A time penalty may be assessed for such incident.
- D.5.5.1.2 Brown Flag - Pull into the penalty box for a mechanical inspection of your Go-Kart, something has been observed that needs closer inspection.
- D.5.5.1.3 Blue Flag - Pull into the designated passing zone to be passed by a faster competitor or competitors. Obey the course marshal's hand or flag signals at the end of the passing zone to merge into the competition.
- D.5.5.1.4 Checker Flag - Your segment has been completed. Exit the course at the first opportunity after crossing the finish line.
- D.5.5.1.5 Green Flag - Your segment has started, enter the course under the direction of the starter.
Note: If you are unable to enter the course when directed, wait for another green flag as the opening in traffic may have closed.
- D.5.5.1.6 Red Flag - Come to an immediate safe controlled stop on the course. Pull to the side of the
- D.5.5.1.7 course as much as possible to keep the course open follow course marshal's directions.
- D.5.5.1.8 Yellow Flag (Stationary) - Danger, SLOW DOWN, be prepared to take evasive action, something has happened beyond the flag station. NO PASSING unless directed by the course marshals.
- D.5.5.1.9 Yellow Flag (Waved) - Great Danger, SLOW DOWN, evasive action is most likely required, BE PREPARED TO STOP, something has happened beyond the flag station, NO PASSING unless directed by the course marshals.

D.5.5.2 Informational Flags

- D.5.5.2.1 Orange Flag - Something is on the racing surface that should not be there. Be prepared for evasive man oeuvres to avoid the situation. (Course marshals may be able to point out what and where it is located, but do not expect it.)
- D.5.5.2.2 White Flag- There is a slow-moving Go-Kart on the course that is much slower than you are. Be prepared to approach it at a cautious rate.

D.5.5.3 Endurance Penalties

- D.5.5.3.1 The penalties in effect during the endurance event are listed below:
- D.5.5.3.2 Come down or out: Five (5) seconds per cone. This includes cones before the start line and after the finish line.
- D.5.5.3.3 Off Course (OC): For an off Course, the driver must re-enter the track at or prior to the missed gate or a twenty (20) second penalty will be assessed.
- D.5.5.3.4 Missed Slalom: Missing one or more gates of a given slalom will incur a twenty (20) second penalty.
- D.5.5.3.5 Bump: No matter with the reason and the intensity of the contact, if any kart hits another kart following cases will be applicable-
- D.5.5.3.6 (Case 1) If kart 2 hits Kart 1 and if no breakage, dent, scratch occurs on any of the two karts,

then a penalty of 20 points will be on team 2.

- D.5.5.3.7 (Case 2) If kart 2 hits Kart 1 and breakage, dent, scratch occur on any of the two parts, then both teams will be disqualified from Endurance.

Note- breakage, dent, scratch after hitting will check by marshal either on spot or after race completes. Push out-If Kart 1 constricts the drivable section towards the outside line forcing Kart 2 to leave the drivable section either partially or complete and if the Karts have touched each other or not, in both cases a penalty of 20 sec will be added on Kart 1.

Multiple movements on either side- If kart 1 found doing multiple movements on either side of the track, stopping the path of Kart 2 and not let Kart 2 to overtake. In this case, Kart 1 will be disqualified from Endurance.

Short-cut- If Kart 2 leaves the track completely and returns to the track at a different section for overtaking another kart or taking a shortcut. A penalty of 20 sec will be added on Kart 2.

Running Out of Order: A penalty of 2 Minutes will be awarded.

E DRIVER'S HANDBOOK

E.1 Driver's Requirement

Every team should have minimum two drivers and **two pairs of driver's equipments**.

E.1.1 Driver's License:

Team members who will drive a competition vehicle at any time during a competition must hold a valid, the government issued driver's license.

E.1.2 Driver Restrictions

Driver must be from the team. The professional driver from outside is not allowed to ride the vehicle during the competition.

E.1.3 Medical Insurance

Individual medical insurance coverage is required for both driver and is the sole responsibility of the driver. A driver without a valid Medical Insurance will not be allowed to drive in the Dynamic Events.

E.1.4 Age

The minimum age required to be a driver in the competition is 18 years.

E.2 Driver's Equipment

E.2.1 Drivers Safety Gear

- E.2.1.1 The following are the minimum requirements and restrictions that will be enforced through technical inspection, at any stage of the competition. Noncompliance if any observed by the inspection/organizing/judging committee members must be corrected and no vehicles without passing the technical inspection would be allowed to participate further in the event. All the parts of Driver's Safety Gear must meet the required rating (specified). No driver would be allowed to drive

the vehicle without the complete driver's safety gear in any of the dynamic events.

E.2.2 Driver's Suit

- E.2.2.1 A fire-resistant one-piece suit made from a minimum of 1 layer that covers the body from the neck Down to the ankles and the wrists. The suit must be certified to either one of the Following standards and be labeled such as SFI 3.2A/1 (or higher) / FIA Standard 1986.



Figure 18 SFI 3-2A/5-Left & FIA Standard 1986- Right

E.2.3 Underclothing

- E.2.3.1 It is strongly recommended that all drivers Wear fire resistant under clothing SFI 3.2A/5 / FIA standard 1986 or higher (long pants and long sleeve t -shirt) under their approved driving suit. This fire-resistant underclothing (SFI/ FIA rated) should be made from an acceptable fire-resistant material and should cover the driver's body completely from neck down to ankles and also the wrists.



Figure 19 Innerwear along with rating

E.2.4 Helmet

- E.2.4.1 A well-fitting closed face helmet that meets one of the following certifications and is labeled as such- Snell K2000, K2005, K2010, M2000, M2005, M2010, SFI31.2A, SFI 31.1/2005-FIA 8860-2004, FIA 8860-2010, DOT.
- E.2.4.2 Open faced helmets are not allowed. All helmets to be used in the competition must be presented during Technical Inspection where approved helmets will be a sticker. The organizer reserves the right to impound all non- approved helmets until the end of the competition.





Figure 20 Closed face helmet along with Snell/FIA/SFI rating

E.2.5 Balaclava

- E.2.5.1 A balaclava which covers the driver's head, hair, and neck, made from an acceptable fire-resistant material (SFI 3.2A/5 / FIA standard 1986 or higher) as or a full helmet skirt of acceptable fire-resistant material. The balaclava requirement applies to drivers of either gender, with any hair length.



Figure 21 SFI rated balaclava

E.2.6 Neck Support

- E.2.6.1 The neck support must be a full circle (360°) and SFI rated. Horseshoe collars are not allowed. Simpson, RCI, G-Force, Deist or Leaf Racing Products supply neck collars that meet this requirement.
- E.2.6.2 A 360 degree continuous perimeter neck support along with required rating is allowed, Neck support with slots is not allowed



Figure 22 Left: Neck support (Allowed) Right: Neck support (Not Allowed)

E.2.7 Gloves

- E.2.7.1 Fire resistant gloves made from acceptable fire-resistant material (SFI/ FIA rated) Gloves of all leather construction or fire-resistant gloves constructed using leather palms with no insulating fire resisting material underneath are not acceptable.



Figure 23 SFI rated gloves

E.2.8 Shoes

- E.2.8.1 Fire resistant shoes made from acceptable fire-resistant material shoes must be certified to the standard and labeled as such: SFI 3.2A/ FIA 8856-2000.

Note: Sports shoes/Canvas shoes/Leather shoes/Industrial safety shoes are not allowed at any point of the event.



Figure 24 SFI Rated Shoes

E.2.9 Socks

- E.2.9.1 Fire resistant socks made from acceptable fire-resistant material, which covers the bare skin between the driver's suit and the boots or shoes.

E.2.10 Code of Conduct during the event

- E.2.10.1 When attending driver's meet or any other meeting/briefing session driver should be therewith complete safety gears, unless advised otherwise by organizing committee of IKR.
- E.2.10.2 Driver's suit and other safety gears should always be ready in the pit so that they can change into their suits as soon as possible.
- E.2.10.3 The driver should not drive the car during the event unless advised to do so.
- E.2.10.4 If the team is found driving the vehicle unnecessarily without permission, then the team will be disqualified.
- E.2.10.5 Before every event team must inform the driver, who will be driving the vehicle. Only he will be

allowed to drive for that event. However, if team decide to change the driver, then they must do it by consent of organizing a team of IKR. During endurance, change of driver is not permitted.

- E.2.10.6 The driver should not consume any objectionable items (cigarette, alcohol, etc.,) before entering for the event.
- E.2.10.7 The driver should drive in a safe and professional way.
- E.2.10.8 The vehicle should not touch each other, as this may result in disqualification/penalizing of the team as per rule mentioned in the rulebook.
- E.2.10.9 Overtaking must be done in a legal way, illegal overtake (details will be explained before endurance event) may lead to penalty or disqualification of the team from endurance.
- E.2.10.10 While defending their position, it should be done in a professional way, the driver should not block faster vehicle's way intentionally. If found, they will be penalized accordingly.
- E.2.10.11 Drivers must follow and obey instructions of track marshals all the time. Marshals will communicate with the driver through flag signals, they must obey those signals.
- E.2.10.12 Each driver should be on call with team representatives, throughout the endurance. This for the safety of the driver, so that in the case of medical emergency either teammate or organizers can reach him/her.
- E.2.10.13 Driver must use "in the ear" type of headphones only during the race, "over the ear" headphones are strictly restricted.
- E.2.10.14 In the case of mechanical failure/breakdown, the vehicle will not be allowed to continue further. The team will be awarded DNF.
- E.2.10.15 If any team hits other teams' vehicle, then the first team (which has caused the accident) will be disqualified, and the other team (which is the victim) will be allowed to run only after a complete checkup of components. In the case of breakdown due to this accident, the first team will have to pay for the loss of that component.

F IMPORTANT GUIDELINES

F.1 Uses of Old Components

F.1.1 Usage of old battery and motor

If a team is using old battery and motor, team must provide health certificate for the same from the authorized vendor.

F.1.2 Battery BMS

Teams can use new BMS only. If any team is using the old battery, then BMS must be replaced. (Original bill copies of the BMS is required to show at the time of Technical Inspection)

F.1.3 New Battery and Motor Kit

If any team wants new battery or motor, ISIEINDIA refers TECH IMPERIAL as their official vendor.

F.1.4 Grand Stand Registration Fee

Teams are required to pay the nominal charges for the grand stand registration. The details will be shared with the teams prior to the final event dates.

F.2 RULES QUESTIONS

F.2.1 Question Submission

Team need to submit question by Team mail Id only to isie.ikr@imperialsociety.in. For the same question, Team need to type in response of the previous mail related to that question. For new question, Team must write the new mail.

F.2.2 Questions

By submitting a rules question to on isie.ikr@imperialsociety.in, you and your team agree that both your question and the Committee's answer can be reproduced and distributed by ISIEINDIA, in both complete and edited versions, in any medium.

F.2.3 Question Types

The ISIE Committee will answer questions that are not already answered in the rules or FAQs or that require new or novel rule interpretations. The Committee will not respond to questions that are already answered in the rulebook. For example, if a rule specifies a minimum dimension for a part the Committee will not answer questions asking if a smaller dimension can be used.

F.2.4 Response Time

Please allow a minimum of two (2) weeks for a response. The General Questions will be responded as quickly as possible, however responses to questions presenting new issues, or of unusual complexity, may take more than two weeks.

F.2.5 Protest/Appeals

It is recognized that hundreds of hours of work have gone into fielding a vehicle. In the heat of competition, emotions peak and disputes can arise. The organizers and ISIEINDIA staff will make every effort to fully review all questions and resolve problems quickly and efficiently.

F.2.6 Preliminary Review – Required

If a team has a question about scoring, judging, policies or any official action it must be brought to the organizer's or ISIE staff's attention for an informal preliminary review. Only Team captain is allowed to submit the appeal.

F.2.7 Preliminary Review - Problem Report

If a team has a question about one of their results/scores they can file a Problem Report by mail to isie.ikr@imperialsociety.in while at the competition site. Additional details about how to file a Problem Report will be available at the competition site. A Problem Report is not a formal protest but should be initiated prior to a formal protest if possible.

F.2.8 Cause for Protest/appeal

A team may protest any rule interpretation, score or official action (unless specifically excluded from protest) which they feel has caused some actual, nontrivial harm to their team, or has had a substantive effect on their score.

Teams may not protest rule interpretations or actions that have not caused them any substantive damage.

F.2.9 Protest Format and Forfeit

All protest must be filed in writing and presented to the organizer or ISIE Staff by the team captain or a designated team member. In order to have a protest considered, a team must post a twenty-five (25) point protest bond which will be forfeited if the protest is rejected.

(ISIE staff, judges or volunteers will not review any video footage as part of the protest.)

F.2.10 Protest Period

Protests concerning any aspect of the competition must be filed within one half hour (30 minutes) of the end of the event to which the protest relates.

F.2.11 Decision

The decision regarding any protest is final.

F.2.12 Disqualification and Cancellation

F.2.12.1 Prizes awarded will be as advertised for each competition, however [ISIE-IKR]™ reserves the right to add or award additional prizes.

F.2.12.2 The ISIE-IKR organizing committee reserves the right to cancel any award/prize, in its sole discretion, without any restrictions.

F.2.12.3 The ISIE-IKR organizing committee, in its sole discretion, may disqualify any Team from any event or Contest, or from accessing the entire Platform or any part thereof, or refuse to award prizes to team, or require the return of any prizes, or suspend or terminate team Account, if You engage in conduct that the ISIE-IKR deems, in its sole discretion, to be improper, unfair or otherwise adverse to the operation of the Platform or in anyway detrimental to other Users or in violation of any Applicable Law.

F.2.12.4 Improper conduct includes, but is not limited to:

F.2.12.5 Falsifying personal information required to use and register on the Platform or claim a prize; Violating any of these Terms of Use or the rules provided in the IKR19 regulation/guides, or Obtaining another User's information and Spamming (defined below) other Users; Abusing or misusing the Platform in any way; or Otherwise undertaking any act which is detrimental to the ISIEINDIA and/or the other Users of the Platform.

F.2.12.6 Team acknowledges that the forfeiture and/or return of any prize shall in no way prevent the Society from pursuing criminal or civil proceedings in connection with such conduct.

F.2.13 Prizes and Taxation

Within a reasonable time period after each Go Green Event corresponding to a Contest end, the Winners for the Contest(s) are announced but remain subject to final verification by the ISIEINDIA. The ISIE-IKR may, in its sole discretion, award cash or non-cash prizes, to the Winners of each Contest. The details of the prizes that maybe won by the Participants, together with the prize structure for each Contest will be displayed on the Platform prior to the start of the corresponding Event.

F.2.13.1 From time to time, the ISIE-IKR, at its sole discretion, may offer prizes for Contests. These could be

in the form of cash, Game Money, or through external partners ("Brand Contests") The Company reserves the right to cancel/modify such Contests without assigning any reason whatsoever.

- F.2.13.2 The Company offers no warranty and bears no liability for the quality of the prizes and the fulfillment of the same for all Brand Contests.
- F.2.13.3 Prize calculations for a Contest are based on the results as of the time when final scoring is tabulated by the ISIEINDIA after the end of an Event(s). Once Winners are initially announced by the ISIE-IKR, the scoring results can be changed in light of adjustments made in the official scoreboards, though we reserve the right to make adjustments based on errors or irregularities in the transmission of information to Us from Our stats provider or in our calculation of results. In determining the Winners, the ISIE-IKR shall not modify or manipulate the points awarded to any Participant in any manner whatsoever.
- F.2.13.4 We also may make adjustments or withhold prizes, in the event of non-compliance by any of the Users with the Terms of Use.
- F.2.13.5 No request for substitution or transfer of a prize shall be entertained by the ISIEIKR. Where the Winner requests the Company to transfer the cash prizes to his bank account, the same will be disbursed ONLY to Winners who are account holders with a bank in India via an electronic funds transfer. The ISIEINDIA shall NEITHER physically mail the cheque containing the prize money to the Winner's postal address NOR shall the ISIEINDIA hand over cash to the Winner through any other means. All taxes associated with the receipt or use of any prize is the sole responsibility of the Winner. In the event that the awarding of any Prizes to Winners of the Contest is challenged by any Authority, the Company reserves the right, in its sole discretion, to determine whether or not to award or adjust such prizes, which shall be in compliance with the Applicable Law.
- F.2.13.6 In all disputes arising out of the determination of the Winner(s) of the Contest(s), the Society is the sole judge and its actions are final and binding on all the Participants.
- F.2.13.7 All prizes shall be subject to deduction of tax at source ("TDS") as per the provisions of the Income Tax Act, 1961. Winners will be provided TDS certificates in respect of such tax deductions. The Winners shall be responsible for payment of any other tax/ surcharge under the Applicable Law, including but not limited to, gift tax, etc. in respect of the prizes.

F.2.14 Publicity

- F.2.14.1 By entering into a Event, You consent to the Company's and its service providers' and business partners' use of Your name, voice, likeness, photograph and other information provided by You, in connection with the development, production, distribution and/or exploitation (including marketing and promotion) of the selected event and/or other event and Contests made available through the Platform.
- F.2.14.2 The Winners agree that the Company has the right to ask them to make themselves available to the Company for publicity, advertising and promotional activities relating to the event/ Contests or other Company products, services or events, without additional compensation, from the date of notification of their status as a Winner and continuing until such time when notified by the Company that they no longer need to do so.
- F.2.14.3 The Company and its business partners reserve the right to make public statements about the Participants and the Winner(s), on-air, on the internet, or otherwise, prior to, during, or following the

event. Team agree that the Company may announce any Winner's name on-air or on any of its websites or any other location at any time in connection with the marketing and promotion of the Company, its business or other Games and Contests conducted by the Company.

- F.2.14.4 Team agree that participation in and (where applicable) the winning of a prize in connection with a Contest constitutes complete compensation for Team's obligations, and Team agree not to seek to charge a fee or impose other conditions on the fulfillment of these obligations.

F.3 Rules and Jurisdiction

F.3.1 Official Announcement

- F.3.1.1 All the official announcements and the information regarding the competition will be displayed on the official websites of Imperial Society of Innovative Engineers.
- F.3.1.2 After completion of registration, important information will be sent via the emails to the respective Team Manager.
- F.3.1.3 The rules will be same throughout the event and any amendments done will be informed immediately by all the participating team through Mail/Facebook, LinkedIn, Instagram group/page.

F.3.2 Rules authority

- F.3.2.1 All the authority of rules is under Organizing Committee of "IKR".
- F.3.2.2 Official announcements from Organizing Committee will be considered part of rules and have the same validity.
- F.3.2.3 Query regarding event concerning the meaning or intent of these rules will be resolved by the Participants Relations Manager of organizing a committee.

F.3.3 Rules authenticity

- F.3.3.1 The rules and other information related to events are valid till completion of the event and schedule as per decided by the ISIE. Rule of other may be different.

F.3.4 Rules compliance

- F.3.4.1 By entering through registration in this competition, the team members, team advisors and other personnel of the entering organization agree to comply with and be bound by, the rules and all rules interpretations or procedure issued or announced by Organizing Committee of "IKR".
- F.3.4.2 All team members, team advisors, and other representatives are required to cooperate with, and follow all instructions from competition organizers, officials, and judges.

F.3.5 Understanding the Rules

- F.3.5.1 Teams, team members as individuals and team advisors are responsible for reading and understanding the rules in effect for the competition in which they are participating.

F.3.6 Participating in the competition

- F.3.6.1 Teams, team members as individuals, team advisors and other representatives of a registered organization who are present on-site at a competition are considered to be "participating in the competition" from the time they arrive at the site until they depart the site at the conclusion of the

competition or earlier by withdrawing.

F.3.7 The right to Impound

F.3.7.1 During the event, any registered team can be called for technical inspection and examination at any point of time and stage and can be questioned for any technical element related to the Vehicle during the event to any team member.

F.3.8 Restriction of vehicle use

F.3.8.1 Teams are cautioned that the vehicles designed by the team are restricted to operate at the event place. It is to be operated at the time of competition only.

F.3.9 Behaviour

F.3.9.1 All the members of each and every team must follow the rules laid by Organizing Committee of "IKR", during the competition. Any member's failure to follow the rules will result in 20%-point reduction or elimination from the event. Arguments with officials may also result in the team being eliminated from the event.

F.3.10 Smoking and Illegal Material

F.3.10.1 Alcohol, illegal drugs, weapons or other illegal material are strictly not allowed on the event site during the competition. This rule will be in effect during the entire competition.

F.3.11 Unsportsmanlike Conduct:

F.3.11.1 In the event of unsportsmanlike conduct, the team will receive a warning from an official. A second violation will result in the expulsion of the team from the competition.

F.3.12 Official Instructions

F.3.12.1 Failure of a team member to follow an instruction or command directed specifically to that team or team member will result in a twenty-five (25) point penalty.

F.3.13 Arguments with Officials

F.3.13.1 Argument with, or disobedience to, any official may result in the team being eliminated from the competition. All members of the team may be immediately escorted from the grounds. Parties: Disruptive parties either on or off-site should be prevented by the Team Advisor Safety of tools: Teams will be responsible for all their tools, equipment and Component. ISIE will not be responsible for any kind of losses or damage.

F.3.14 Violation Intent

F.3.14.1 Any violation of this rule by a team member will cause the expulsion of the entire team. This applies to both team members and team advisors. Any use of drugs, or the use of alcohol by an underage individual, will be reported to the authorities for prosecution.

F.3.15 Competition Objective – A Reminder

F.3.15.1 The IKR event being organized by ISIE is a challenge of design engineering and manufacturing

competition that requires performance demonstration of Combustion and Electric Vehicles and is NOT a race. Engineering ethics will apply.

F.3.15.2 It is recognized that lots of hard work have been put in by the teams for an entry into IKR Event.

F.3.15.3 It is also recognized that this event is an “innovation enhancement experience” but that it often times becomes confused with a high-stakes race. In the heat of competition, emotions peak and disputes arise.

F.3.15.4 The officials of ISIE are trained volunteers and maximum effort will be put in to settle the disputes an equitable, professional manner.

F.3.16 General Authority

F.3.16.1 ISIE and the competition organizing bodies reserves the right to revise the schedule of any competition and/or interpret or modify the competition rules at any time and in any manner that is, in their sole judgment, required for the efficient operation of the event or the IKR series as a whole.

F.3.16.2 ISIEINDIA refers their official vendors. They provide best products at discounted price.