

General Regulation



The organizer reserves the right to modify these regulations at any time.

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Acknowledgement

We would like to thank Chris Selwood and the World Solar Challenge for their great cooperation. They shared their hard work and brilliant expertise with the European Solar Challenge, as well as enabling us to found the following technical regulations on those of the World Solar Challenge. This collaboration stands for joint work and mutual interest in creating a well-functioning and fair event for every participating team.

Also we would like to keep Laurenz Holthoff in memory, who was in the organizer team in previous events but sadly is no longer with us. He did outstanding work until preparations for the European Solar Challenge 2018.

Administration

Event Organizer

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Cancellation of Event

The organizer reserves the right to cancel or abandon the event for any given reason. The organizer's liability for costs sustained by an entrant are limited to the amount of the entry fee.

Should the organizers of the European Solar Challenge have to cancel the event, any application or shipping fees will not be refunded.

In case the 24 hours iLumen European Solar Challenge is canceled by the organizers themselves, the entry fee will be refunded.

If another party obligates the organizers to cancel the iESC, the organization will decide whether or not to refund the entry fee.

In case that teams are unable to participate in the event despite signing up and already having paid the entry fee, the organizers will decide on a possible refund of the entry fee.

Insurance

All team members need to be personally insured for any physiological or property damage that may arise. Please also note that all drivers participate at their own risk and are not insured via the organizers of the European Solar Challenge.

Third Party Property Damage

Cover has been arranged for any claims against the organizer for damage done by your solar car during the event. All arising costs are responsibility of the entrant.

Entry Fees

Application fees amount to 3500 EUR, excl. 6% taxes. This price is conditional on 15 teams participating in the iESC 2021. If this is not the case, the price will increase proportional to the number of participating teams. Application fees cover up to 20 team members. For every additional team member, teams will be charged 20 EUR. A deposit of 500 EUR has to be paid in advance before June 1, 2021. Application fees cover participants' usage of the camping grounds as well as the usage of sanitary facilities.

Pit Box Key

Teams have to leave an 200 EUR cash deposit for the key to lock their designated pit box on their own. The deposit will be returned on Sunday when the team hands their key back to the event organizers.

For deposit return the pit box has to be clean and empty.

Race Organization

Announcements

Official announcements (e.g. race commission meetings) can be found at the info desk whiteboard throughout the event and will also be announced via a communication channel over the internet, most probably via a WhatsApp group in which all team leaders will be part of

Every team is required to check for new announcements once per hour.

Race Commission

Each team needs to pick one member each to join the race commission. As detailed below, the commission will consist of one member from each team and at least one event organizer at all times.

Decisions put before the race commission will be decided by majority vote, whereas the race control always holds exactly one vote.

One race control member will organize and lead the race commission, but not participate in any voting.

Failure to provide a team member to the race commission may result in a team's immediate disqualification.

The task of the race commission is to clarify discrepancies regarding the regulations.

Furthermore, the race commission will make all decisions concerning unpredictable influences on the race, such as its termination or interruption due to unfavourable weather conditions.

Each team may call for a meeting of the race commission no more than once during the event. For every further summoning, the concerning team will be charged a fee of 500 EUR each.

The only exception to the above mentioned requires all participating teams to voice the same objection. For an official application form see .

Race Control

The task of the race control is the event's surveillance.

Therefore, all communication channels used during the event are required to include the race control. The race control is also in charge of decisions concerning the status of the race track, status of the flags, time penalties, and whether or not a safety car is to be present on the track at any given time.

If discrepancies arise teams may contest time penalties through the race control.

If the race control decides in favour of the team the existing penalty will be adjusted or withdrawn. Once again the issue will be examined together.

The race control may summon the race commission at all times.

Support Vehicles

Without permission from the race control no support vehicles are allowed on the race track.

Safety Vehicles

Safety vehicles will be driven by the official event organizers of the European Solar Challenge or by employees of the race track themselves (ambulance).

If a safety car is required it will drive on the track's 'slow side'. No two race contestants may overtake one another or the safety car on the track until the safety car reopens the track and returns to the pit lane. In the case of the yellow flag being displayed, overtaking is also not allowed.

Radio Communication

Each team has to provide two-way channelled radios, which allow communication between the pit lane and the solar car throughout the race track.

Additionally, teams have to rent two handheld radios from the event organizers (cost is approximately 100 EUR, however details on the pricing are announced later). These have to be used in each solar car as well as in the pit box for communication between the race control and the team.

All drivers should understand English sufficiently to understand essential radio commands.

Entering the Race Track

Team members are prohibited from entering the track unless access is explicitly granted by the race control. Everyone entering the race track is required to wear a reflective vest at all times.

Pushing

Manually moving the solar car by either pushing or pulling after placing it on its starting position is not allowed. Manual movement is allowed only in the area between the pit boxes and the red line dividing the pit lane.

In case of an emergency situation, technical failure, or vehicle damage, the concerning vehicle has to be removed from the racetrack as soon as possible. In this case, teams may manually move their vehicle for the purpose of removing it from the track.

Damage and Vehicle Failure

If a solar car becomes unable to continue the race, either by breaking down on the track or encountering any mechanical or electrical issues, it has to be removed from the race track as soon as possible. Any necessary repairs can only take place inside the team's pit box.

Each solar car has to carry a towrope at all times, so it may be towed by a safety car in case of it breaking down.

Every vehicle which is towed off the race track has to be inspected before entering the race track.

If a car stops on the track, the currently unfinished lap will not be counted.

Charging With an External Power Supply

During the 24-hour race each team may charge their car from mains twice. Cruiser class cars are allowed to charge more than two times, however this will influence the total energy score as described in . Each charging stop has to last no less than one hour. The event organizers will provide a 3 Phase 16A CEE Power Outlet (IEC 60309, 230 Vac, +10%, -6%) for each team.

While charging, it is not allowed to fix technical problems or to modify the car.

While charging, a solar car's battery containers must remain closed. All High Voltage parts must be protected from physical contact.

All single cell voltage and temperature values measured while charging need to be visible to the present observer.

Teams may actively cool their vehicle's batteries only after proving the measured temperature to be the highest of all cells.

Teams have to hand in a technical documentation of the battery that is going to be cooled including the following information:

- cell type and manufacturer
- cell configuration (number of cells in parallel and series)
- number and type of temperature sensors
- technical drawing or photo of the battery pack
- technical drawing of a module (including temperature sensors)

All parts that are used to cool the battery have to be fixed to the vehicle and have to stay inside during the entire event.

Teams are required to provide their battery safety equipment (including a fire extinguisher).

No more than three team members may be present while charging the team's car.

Solar Charging

Teams may charge their vehicle's batteries using solar power at any time. Any alignment of the panels is only allowed in the designated charging area. The charging area's location will be announced during the event.

Driver Changes

Changing a vehicle's drivers has to last no less than 5 minutes.

Within this time an observer is allowed to check the function of the vehicle's horn and lights.

Teams shall report their driver changes to the observers one lap in advance.

No more than four teams may switch their vehicles' drivers at a time.

Once a team announces a driver change to the observers, one of the four existing changing slots is immediately reserved for that team.

Once a team announces a driver change to the observers, the team's solar car may not cross the finish line once more but has to enter the pit lane in that lap.

Teams are themselves responsible for avoiding delays caused by all changing slots being occupied.

Teams are furthermore responsible for appropriately scheduling their driver changes, ensuring no driver will drive for more than two hours in a single stint.

Teams may extend two of their stints by a maximum of 15 minutes each or instead one stint may be extended by 30 minutes.

Safety

All occupants have to wear a helmet at any time inside the car.

Safety Equipment

The teams have to provide the following equipment:

First-aid-box, ABC fire extinguisher (10 kg or more), reflective vests for all team members, battery datasheet, battery safety container and a safety method to extinguish a battery fire.

The solar car's battery has to fit into the battery safety container. The container has to be fireproof.

The battery safety container and first-aid-box have to be ready for use in the pit lane. Every team member is required to wear a reflective vest when inside the pit lane or on the race track.

Battery Safety

During the event, all battery parameters must be within the limits specified by the manufacturer.

The vehicle's power supply has to meet the electrical safety guidelines of the team's home country.

During the 24h-race each team has to inform the race control hourly about the following values of their traction battery:

- highest cell temperature
- lowest cell temperature
- highest cell voltage
- lowest cell voltage

Visitors

We're always trying to keep the European Solar Challenge an event with lots of room for socializing and exchange of knowledge or expertise. However, private visitors may only enter the pit boxes or pit lanes when registered with the organizers. Furthermore, they are required to wear reflective vests in this area.

Additionally, all media correspondents need to register with the organizers in advance. They need to check in at the info desk on arrival.

Visitor passes will be available at the info desk for free.

Pit Lane Safety

The area limited by the pit boxes on one side and the red line on the opposite side is mainly reserved for repairs and modifications, and should be kept clear by private visitors.

The area beyond the red line should be kept clear at all times.

No tables, chairs, or other temporary constructions may be placed directly alongside the wall dividing racetrack and pit lane.

All private visitors to the pit lane are to stay inside the designated pedestrian area.

Any vehicle driving on the pit lane must not exceed the maximum speed of 20 km/h. This will be measured at all times during the event.

Clothing

Every person entering the pit lane has to wear high visibility reflective clothing.

Wearing solid shoes will be mandatory inside the pit lane at all times.

Drivers are especially requested to comply with this rule. The driver's clothing should cover the entire body.

Clothing should be made of natural fibres and cover the occupants' legs, arms and upper body. Natural fibres are flame-retardant by themselves whereas synthetic fibres can melt and cause dangerous burns on the skin when catching fire.

Drugs and Alcohol

During the entire event, no participant may consume or be under the influence of any soft or hard drugs.

Furthermore, nobody participating in the event may consume or be under the influence of alcohol during the time of the main event.

Scrutineering

Qualification must be achieved in road ready configuration. Vehicles which are unable to present at the designated time or are not ready to start may fail to qualify.

Each team must provide appropriate tools and personnel to facilitate the inspection of structural components.

Checks and inspections with the solar car in a road-ready configuration will include, but not be limited to:

- Signage
- Solar car size
- Solar collector type and size
- Vision (shortest and tallest driver required)
- Lights, indicators, horn
- Ability to tow the car
- Electrical compliance

The weight of all drivers must exceed 80 kg, of all passengers 60 kg.

Teams are responsible for providing additional penalty weights should one or more of their drivers weigh less than 80 kg (respectively passengers 60 kg).

These penalty weights should be presented inside a container which can easily be sealed by the organizers.

The maximum number of team members participating in the scrutineering is limited to 7 people.

Qualification must be achieved in road-ready condition. Teams unable to present at the designated time in road-ready condition may fail to qualify.

Penalties

The race commission may contest any arising penalties.

Penalties range from official warnings to disqualification from the event.

All penalty times listed are suggested minimums.

Driving conduct may double with each subsequent infraction.

Mathematical penalties will normally be the same for each infraction.

If the inspectors believe that teams are deliberately violating regulations for strategic advantage, they may impose more penalties up to and including potential disqualification.

The race commission has the possibility to protest against the penalties.

Penalties including disqualification from the event may be imposed for improper conduct or the use of alcohol or illegal substances. Improper conduct may include but is not limited to:

- Unsafe behaviour
- Speeding in the pit lane
- Cheating
- Improper language
- Unsporting conduct
- Violation of traffic rules around the racetrack
- Driving without properly fitted safety belt
- Distracting Race Control

Teams or team members may be penalized for disregarding any instructions given to them by the event organizers.

Teams are responsible for the conduct of all persons associated with the team, whether or not they are officially registered.

Pushing

A penalty of one lap will be given to every team who pushes a solar car while on the track. (Except in an emergency).

Improper Ballast

A five lap penalty may be assessed each time a team operates their solar car with ballast not matching the one assigned to the car's driver or their passengers.

Unauthorized Drivers

Any solar car driven by an unauthorized driver will be required to return to the pit lane and drive with an authorized driver. Unauthorized driving will not be counted.

Disturbing Official Battery Seals

Solar car batteries will be marked with an official seal. Disturbing these seals in a manner that prevents proper identification by an observer may be penalized as though all of the battery cells affected had been replaced as handled in the following penalty regulation.

Replacement of Batteries

Decisions to exchange all or part of a battery must be communicated formally to the team's observer. The penalty will be computed as follows:

- Cruiser cars: The energy score's battery capacity is incremented by two times the replaced capacity.
- Challenger cars: One lap penalty for each 3600 mAh of replaced capacity.

Exceeding Size Specifications

Oversize solar arrays will be penalized one lap per exceeded square centimeter beyond the allowed size specification.

Restriction on Overtaking

On the track there are three dangerous turns. The restriction on overtaking will be marked with red tire stacks (details will be announced in the team meeting). Dangerous overtaking in these curves will be penalized with a penalty of three laps.

Shortcut curves on the green areas beside the track will be penalized with one lap penalty.

Stopping

Stopping on the racetrack will result in a penalty of one lap. Obstructing other teams will increase this penalty. An exception are unforeseen car breakdowns.

Slow Vehicles

Slow vehicles not driving on the slow side of the track will be penalized with at least one lap. Obstructing other teams will increase this penalty.

Blocking Cars

The blocking or hindering of other vehicles out of deliberation or negligence will be penalized with one lap.

Drugs and Alcohol

Consuming any drugs or alcohol inside the pit lane may result in disqualification of the concerning team member or team.

People participating in the event must not be under the influence of alcohol at any time.

Night's Rest

During the main event, all participants are to keep quiet on and around the campsite.

In addition, all participants are required to respect a period of rest every day of the event between 11 p.m. and 7 a.m. During these hours, no noise disturbing the other participants will be tolerated on and around the campsite.

Further Penalties

The Race Control may enforce further penalties during the event. Further penalties will commonly be enforced in accordance with a Race Commission.

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