TMSC

School Solar Challenge

www.tassolarchallenge.org

TASMANIAN MODEL SOLAR BOAT CHALLENGE

2022 REGULATIONS

UTAS

ENGINEERS AUSTRALIA

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TMSC COMMITTEE

The Tasmanian Model Solar Challenge Committee is a voluntary body consisting primarily of University of Tasmania undergraduates, teachers, engineers and other past competitors and will hereafter be referred to as the TMSC. The TMSC is tasked with coordinating the Tasmanian division of the Australian-International Model Solar Challenge.

1. INTRODUCTION

1.1. Aim

The Model Solar Boat Challenge aims to deliver a fun, hands-on learning opportunity to students in the areas of Science, Technology, Engineering and Mathematics (STEM). It offers a practical experience in designing and building a working model solar powered boat, gives students an understanding of the engineering processes involved, and provides an introduction into solar technology and its uses in helping create a more sustainable planet.

1.2. Contact and Correspondence

All correspondence should be emailed directly to the TMSC at www.tassolarchallenge.org/contact

2. ENTRIES

2.1. Age Divisions and Number of Entries

There are two age divisions. The Primary division is aimed for students aged up to Yr 6. The Secondary division is aimed for students aged from Yr 7 to Yr 12. The competition is open to an unlimited number of entries from schools, STEM organisations and other private individuals. Multiple entries are permitted from a single team provided that at least one unique student can be assigned to each boat.

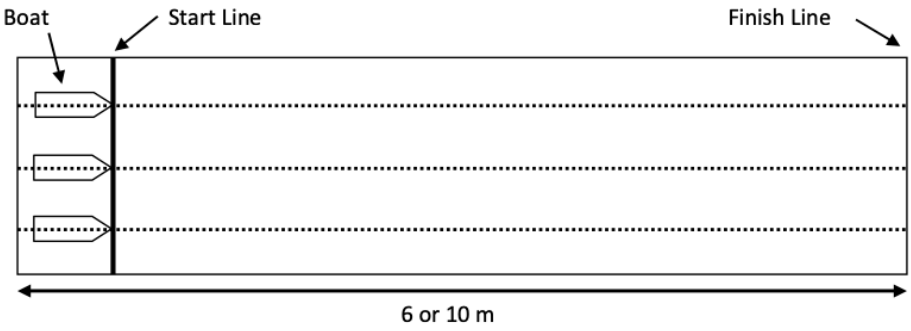
2.2. Original Work

Teams are permitted adult assistance with more complex manufacturing processes, use commercially available components, or reuse parts from a previous boat, but the overall design and construction must be original and the work of the students.

3. COMPETITION

3.1. Boat Pool and Racing Format

Racing will take place in a specially constructed boat pool with a water depth of at least 200mm. The pool heading may be in any direction depending on terrain and location (N-S, E-W, etc). Boats will race either two or three at a time, each following their own guide wire located above the water. Races will be started either by a start gate or by manual release under the direction of a starting Marshall.



Earlier rounds are typically conducted as a series of round robin races and may see boats race one another across both age divisions. Separate knockout competitions are then run later to determine the winner and placegetters for each division. Any best of 3 head to heads may see lanes and the starting end swapped over between races.

3.2. Winning Boat

The winner shall be determined as the first boat to reach the end of the pool in each race. This must be achieved without having interfered with any other boats racing alongside. If no boat is successful in making it to the finish then the one that has travelled furthest will be awarded the win.

4. SCRUTINEERING

Upon arriving at the event each team must pass through scrutineering with their boat. Teams presenting a boat that does not fully comply with these rules will need to make the necessary modifications or may otherwise not be allowed to race.

5. SERVICING

Boat modifications are allowed during the event but must remain within the regulations at all times. These may be checked and re-scrutineered at any time to ensure ongoing compliance.

Due to Health and Safety regulations, any substance classed as hazardous (solvents, liquefied gases, etc.) must be declared to and approved by the TMSC before being used during the competition. This does not include small quantities of commonly available lubricants and spray cans for the purposes of cleaning and/or lubricating bearings, etc.

6. BOAT SPECIFICATIONS

6.1. Size Limit

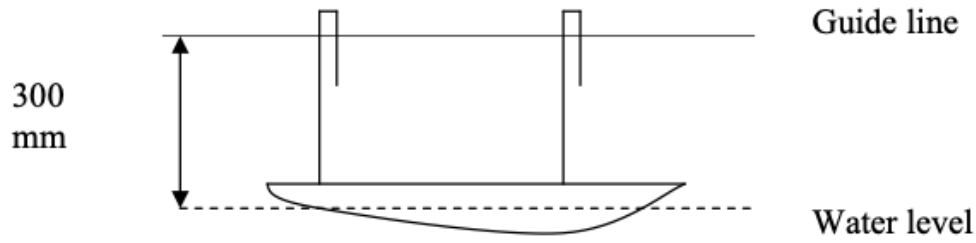
The boat must be no more than 550mm long and 300mm wide. This includes the solar panel when fitted in place.

6.2. Solar Panel

The boat is to be powered by commercially available silicon solar cells of up to 350 sq cm in active area (typically a SOLAR26 solar panel from Scorpio Technology).

6.3. Guides

To enable boats to steer in a straight line they should be fitted with rods with open loops for the guide lines to run through. These lines will be suspended 300mm +/- 25mm above the water. A boat that veers off course and causes a collision with another boat will result in disqualification from that particular race.



6.4. Energy Storage

No storage devices or batteries are allowed. The boat must only operate on the energy provided by the solar panel during the course of a race.

6.5. ON/OFF Switch

All boats must be fitted with a commercially available ON/OFF switch.

6.6. Electronics

Electronics of any kind are allowed however any energy storage devices such as capacitors must be fully discharged before the start of each race.

6.7. Motors

The motor must be commercially available with a recommended retail value of no greater than AUD $10. Motors scrapped from equipment such as old toys, radios, VCR's, etc. are not permitted as their cost and performance cannot be verified.

6.8. Hull

There are no restrictions on hull materials or type.

6.9. Propulsion

There are no restrictions to the number, size or type of propellers, paddle wheels or oars used to propel the boat forwards, provided these remain within the aforementioned size limit.