

Model Solar Boat Race

Design, Build & Race a Model Solar Electric Boat

After the success of their model solar car events organisers are looking to develop solar electric boat races using the same flexible PV's from Schools & Homes Energy Education Project.

All entrants in the Challenge must use an identical set of _____ flexible solar panels. Choice of configuration like motor, hull design and propeller are left to the designer.

Rescue divers will be present keeping vigilant for any boat that succumbs to the elements – there is no submarine category.

There are curriculum links to:

Science:

- Electricity and magnetism
- Light, Force, Motion
- Energy resources/energy transfer
- Alternative energy

Design & Technology

- Problem solving
- Materials and their properties
- Working with tools & materials

The aims of this project are to:

- ⊙ motivate students
- ⊙ enhance school pride and promote public relations
- ⊙ develop student organisational skills
- ⊙ promote cross curriculum work
- ⊙ encourage co-operative group work and research
- ⊙ teach practical skills and technical principles

AWARDS AND PRIZES

There is an award and/or a prize for:

- 1st, 2nd & 3rd place finishers in each final
- boats that are judged to be the most innovative

The fastest solar-powered boat to cover the course will win the Challenge.

[Format and regulations adapted from CSIRO Double Helix solar event.]

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RACE CATEGORIES

There are 3 categories

1 Standard

- Entry for this class is open to the students of primary schools, secondary schools, and colleges.
- This class will have sub-sections for Primary (year _____), Secondary (year _____), Secondary (year _____), and College aged entries.
- Depending upon the number of entries in each sub-section the organisers retain the right to combine sub-sections during qualifying heats and finals.
- No more than _____ standard Plugging into the Sun® flexible solar cells are allowed on each boat.
- The solar cells must not be modified in any way, for example by cutting away edges to reduce weight.
- Entries in this class should be from students who have received limited direct assistance from adults. Adults are encouraged to assist the students to think through problems, identify solutions, and to experiment with different arrangements for the boats and propulsion components.

2 Open

- Entry for this class includes those eligible for the standard class, and individuals who have been invited to enter by the race organisers.
- This class does not have sub-sections.
- The total number of solar cells per boat shall not exceed _____.

3 Remote Controlled

- This race is open to anyone who is eligible to enter any of the races for non-remote controlled boats.
- This race will not be divided into classes.
- The total number of flexible solar cells per boat shall not exceed _____.

[Format and regulations adapted from CSIRO Double Helix solar event.]

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GENERAL RULES

Part 1: All Entries

1. The only restriction on the materials used for building the boat, including all items on the boat, is that the materials must have no polluting or other significant affect on the water quality of the pool.
2. There is no restriction on the number of motors and propellers a boat may have.
3. No commercially available boat kits are to be used.
4. Boats must not be of a design whereby it is deliberately and/or primarily wind assisted.
5. Boats must not be assisted by any external means from the start to the finish. This includes any external means for directing light onto solar cells.
6. Any repairs to the boats during the race must be authorised by a judge or race official.
7. Race officials will retrieve boats that have broken down during a race as well as boats that are still moving too slowly after the majority of the boats in the same heat have completed the course.
8. Boats can only be entered in one race. Solar cells may be transferred between boats where the boats will be in separate heats.
9. Entrants of the remote controlled division are allowed to enter their boat in one of the non-remote controlled categories, provided the remote control is not operated during the race.
10. Only two team members will be allowed in the start marshalling area during each race.
11. Scrutineering of each entry to ensure rule compliance will take place prior to the official start of the competition. All entries are required to be ready for presentation for scrutineering between _____ and _____ on the day of the competition. Scrutineers will examine each vessel to ensure it conforms to the construction specifications. If a vessel fails to meet any of these specifications, it may be altered and resubmitted before the end of the scrutineering period. Vessels failing to pass scrutineering will not be allowed to compete.
12. Upon completion of scrutineering, entries will be given lane assignments and start/finish instructions.
13. The race committee is empowered to make rule amendments and clarifications as necessary and to make any decision on any case not covered by these rules.
14. The race committee will make decisions on any disputes. The race committee's decision on any protest/complaint will be final and no appeals will be accepted.

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Part 2 : All entries except Remote - Controlled Boats

1. Boats entered in either class must fit within the combined measurements of 600mm length, 300mm height and 500mm width.
2. No batteries are to be used.
3. Each lane will be defined by floating cords stretched down the complete length of the lap. These cords are referred to as the "lane lines".
4. Boats must be designed with "whiskers" for lane guidance but must not have any attachment to the lane lines.
5. Boats must remain within the lane boundaries at all times while competing and they must not interfere with any other boat.
6. Boats will be required to complete ____ straight lap/s of the course.
7. The length of the lap is _____ metres.
8. Lane selection will be by a random draw conducted by the race organisers prior to the race.

Part 3 : All Remote - Controlled Boats

1. Boats must fit within the combined measurements of 700mm length and 600mm width.
2. Batteries must not be used in any way for the propulsion of the boats.
3. The boats will race around a course marked by buoys. The course will have both left and right hand turns.
4. Boats must be properly controlled such that there is no deliberate interference with any other boat.
5. Boats will be required to complete _____ laps of the course.

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IMPORTANT RACE INFORMATION

Entry forms: must be received by _____ 2003

They should be sent to:

2003 Model Solar Boat Race

Date: _____ 2003

Times:

_____ am - _____ am (entries are required to be ready for inspection to ensure rule compliance)

_____ am - The event begins.

Where: _____

(If the event is postponed due to adverse weather, the competition will be staged at the same venue on _____ 2003 commencing at _____ am.

Check the Race Website (www._____) on the day of the event.

The competition will consist of 3 race categories. In each category it may be necessary to hold preliminary heats to establish qualifiers for the final.

In the case of qualifying heats the top finishers will advance to the finals.

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ENTRY FORM

There is no race entry fee

Cost per solar cell is £_____

OR

cells may be leased from Schools & Homes Energy Education Project for £_____ per cell per week

Closing date for entries is _____2003

(Please use a separate form for each entry)

Team name:_____

Address:_____

_____Postcode_____

Telephone_____

Email:_____

Boat Name: _____

Team category:

Primary Secondary College

Boat category:

Standard Open Radio-controlled

I would like to pay by:

Cash

Cheque/ postal order (made payable to Schools & Homes Energy Education Project)

We hope that you enjoy this year's race. If you require extra information, please contact us

Tel/Fax: 0114 249 9459

email: david@pluggingintothesun.org.uk

Website: www.pluggingintothesun.org.uk

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