



Swinburne Engineering

**VICTORIAN MODEL SOLAR VEHICLE
CHALLENGE**

***2011 Regulations for:
Sheridan Car Challenge
(Kit Cars)***

**To be held at Scienceworks on
October 23rd, 2011.**

*For further assistance, information and resources, please go to;
www.modelsolar-vic.net*

*or contact the Secretary of the Challenge Organizing Committee
Email: contact@modelsolar-vic.net*

MISSION STATEMENT.

To promote and develop interest and expertise in using solar and renewable energies by school students by using active learning processes in addressing real challenges. By so doing, it is hoped that the citizens, scientists and engineers of the future will be more likely to participate in developing a more environmentally aware approach to energy usage, both by more efficient use of old technologies and appropriate introduction of renewable energy sources.

OVERVIEW

This is a race for model solar cars built by students from the specified kit of parts . A "round robin," in which cars race other designated cars, will begin the competition. This round robin is conducted on an oval track with a single guide rail. The racing is conducted in a pursuit style.

Based on the results of the round robin, cars are allocated into groups which compete in an elimination competition in which the winners continue to the next round, the losers are eliminated. This process of elimination continues until a winner is decided by being the only undefeated car. Final rounds will be held on either the oval track or the figure 8 track (see attachments A and B for track details). In multi heat races the winner will be the car which wins most heats.

Students after competing in this event, are encouraged to apply what they have learnt by designing and developing their own car to compete in the model solar car challenge.

A. INTRODUCTION

A.1 Event name

The event shall be known as the "Victorian (Swinburne Engineering) Sheridan Car Challenge" (V Sheridan CC) and is conducted annually. This, along with boat races, and the Victorian Model Solar Car Challenge and the Mars Rover Event, will form part of the Victorian Model Solar Vehicle Challenge (VMSVC).

A.2 Event structure

Students build and race a car that they have built from a complete kit of parts (except solar panel) and detailed instruction booklet. This car has been designed specifically for the Challenge by committee member Mr. Don Sheridan.

A.3 Committee

The Committee of the Victorian Model Solar Vehicle Challenge (VMSVC) is a voluntary committee consisting of sponsors representatives, teachers, students and other invited interested persons referred to herein as the Committee. The roles of the Committee include establishing the regulations for the year and promoting and organizing the Victorian event.

A.4 Aim

The aim of the event is to encourage student teamwork, enterprise and learning using an action based learning model as students work together to research science and engineering principles relating to solar energy, photovoltaic cells and optimization of energy efficiency, by constructing, testing and racing a model solar car using the Sheridan designed kit.

This event is aimed at students that have not competed before and is intended to be a means of gaining an understanding of solar and vehicle efficiency principles so as to enable students to move on to designing and building cars for the VMSVC model solar car challenge.

A.5 Statement of involvement

Cars entered in any given year must be the work of students in that year. Bodies will be marked at each year's event so that they cannot be re-entered in subsequent years

A.6 Correspondence

General correspondence should be addressed to:

The Secretary of the Organizing Committee

Email: contact@modelsolar-vic.net

Mail: The Victorian Model Solar Vehicle Challenge
PO Box 108 Darling 3145

For orders and technical queries contact :

Mr. Don Sheridan: ph: 9878 5829.

B. INTERPRETATION OF THE REGULATIONS

B.1 VMSVC Rulings

The VMSVC event officials are empowered to make a decision on any case not covered or clarified by these regulations. In the case of dissent from a VMSVC official's ruling, the dissenting team may be excluded from the competition.

B.2 Unfair practices

If VMSVC officials discover that an entrant or crew has deliberately violated these regulations to gain unfair advantage over other entries, or has departed from the spirit of the event, that team will be excluded from the competition.

C. ENTRIES

C.1 Eligibility

All schools in Victoria and school age groups accepted by the Committee are welcome to enter the event. Teams will be expected to comprise at least 2 students, although teams of 1 will be accepted.

C.2 Proof of Student Input.

Students will be required to sign a form indicating that the construction of their car was done with minimal help from teachers or parents.

C.3 Posters

All entries will be required to present to the organizers prior to scrutineering a laminated or contact coated A3 Poster, size 297 mm x 420 mm documenting the design and development of their car. Selected posters will become the property of the organizers and will be used for promotion of the event. Others can be collected at the end of the competition. This poster should document your work and testing*.

The poster will be assessed as follows:

Item	Marks
Headings readable from 3 m Include School Name	1
Writing readable from 1 m	1
Summary of construction process	5
Summary of test results *	5
Presentation – photos, drawings,	4
Greenhouse relevance	3
What you have learnt	5
References, acknowledgements	1
Total	25

* tests you might do would be to see if the car rolls freely in a straight line, what voltage and current you get from the solar cells on fine and cloudy days, what effect the angle of the sun has on output from the cells, effect of pulley ratios on speed.

C.4 Registration and Entry

Please note that registration and entry are two separate activities.

GST is not applicable to any of the fees detailed below.

Cheques should be made payable to **Victorian Model Solar Vehicle Challenge**

Registration

Anyone planning to enter should visit the website www.modelsolar.org.au register online then mail your payment of \$50.00 to the address below by September 1st.

The Victorian Model Solar Vehicle Challenge
PO Box 108 Darling 3145

Registration will be available on the website by mid July. Please note this registration fee includes the entry fee for the first car, **an entry form however is still required for this first car.**

Entry

Entry forms should be downloaded from the website shown above filled in and together with any additional payment required mailed back to

The Victorian Model Solar Vehicle Challenge
PO Box 108 Darling 3145

by September 17th. Entries received by this date will cost a further \$25.00 for each additional car after the first car which is covered in the registration fee. Late entries, that is after 17th September will incur a cost penalty of \$15.00 per entry bringing the entry cost to \$40.00 per car. Entry forms will be posted on the website listed above by early August.

Please note an entry form is required even if only one car is being entered.

A SUMMARY OF ENTRY AND REGISTRATION DATES AND FEES IS SHOWN IN THE TABLE BELOW

Registration and Entry Information and Fees	Fees No GST
School registration form	\$50 due by September 1st
School registration fees (includes first car)	
Entry form for each car (including the first)	\$25.00 per extra entry by 17th of September and \$40 per late entry after 17/9 and by 8/10
Entry fee for each car (excluding the first)	

D. TRACK

D.1 Size and Shape

The track used in this event will be either the single lane 'oval' track which consists of two semi-circular ends of 5 metre radius joined by 7.2 metre straights giving a total length of approximately 46 metres per lap. Or, at the discretion of the organizers, the figure 8 track which is used for the VMSCC model solar car event.

D.2 Construction

The track is constructed from flat plywood with a guide track approximately 13mm high and 16mm wide attached.

D.3 Starting Position

Cars will start on ramps at opposite sides of the track. The ramps will be removed as soon as the cars start. See attachment A for a photograph of a kit car at the start position on a ramp.

D.4 Finish Position

The winning car will be the car which catches the slower car or the car deemed to have travelled the greater distance after the number of laps specified by the committee has been reached. Or if both cars have stopped the car that has travelled the greater distance.

E. SCRUTINEERING

Each car will be briefly scrutineered on the day of the event to ensure that the solar panel meets the area limits and that the car is constructed using only the components supplied with this year's kit.

F. SERVICING

Only students should adjust their car on race day.

G. COMPETITION

G.1 Structure of the races.

The event shall be conducted with cars competing against each other on the same track. A series of 'round robin' and/or elimination races will be announced in the official schedule of events.

G.2 Starting Procedure

Cars must be presented at the start line within two minutes following the call for cars on the public address system at the track in use, or will forfeit the race.

When requested by the starter, a member of each team will place their car at the start position on the movable ramp and turn it on. A marshal will hold the car at the start position and release it on the starter's command.

G.3 Stability

If the car comes off the tracks it shall be deemed unstable and will not be re-started in that race unless the officials are satisfied that the problem was caused by a deficiency of the track. There shall be no handling of cars during the race other than by officials or by people nominated by officials. If both cars come off, the race will be awarded to

the car which travelled the furthest. If a car comes off causing an obstruction, the second car shall be awarded the race if it reaches that point and collides with the car which first dislodged.

G.4 Poor light / adverse weather conditions

At the discretion of the race organizers cars may be equipped with batteries. Batteries, if required, will be provided by the committee.

G.5 Practice and testing

Practice on the track will be allowed at any feasible time that marshals are in attendance.

G.6 Results

Final results will be decided after the provisional winners have been rescrutineered and passed by the officials.

G.7 Prizes

Prizes will be presented to First, Second, and Third place getters. The presentation of prizes will be held as soon as possible after the completion of the event. Additional prizes for best poster, best team effort, best uniform and best decorated car (H1) will be presented to teams deemed worthy.

H. CAR SPECIFICATIONS

H.1 Use of the kit

The cars must be built according to the instructions provided and using only the components supplied in the kit. Teams are welcome to make modifications to the direction of travel, by which we mean the motor at the front or at the rear of the car. This is accomplished by changing the direction of motor rotation by changing the wiring connections to the motor. The pulleys, wheels and roller guides provided must be used. The panel connections may be changed to vary the voltage and current output. In particular the body material and motor provided must be used and no electronic control circuits are allowed.

Painting or decorating the car is allowed provided school and car names etc. are not obscured.

H.2 Source of Power

The car is to be powered by any commercial silicon photovoltaic cells which fit into a 450 cm² active area (ie. the area covered by the photovoltaic cells only, not including encapsulation around the edge or between cells.)

The cells must be of silicon origin and in general commercial supply. This means that specialized or recycled cells from research or space use may not be used.

H.3 School and Car Name

Each entry must have its school name (possibly abbreviated) and car name shown on the car in letters at least 10mm high and visible when racing. These can be attached to any part of the body, provided that they do not interfere with the official labels which will be up to 65mm long and 65mm high on each side of the car.

ATTACHMENT A

PHOTOGRAPH OF KIT CAR ON START RAMP

