



The team of Solar Spirit Australia invites you to take a look at this collaborative TAFE SA project.

These pages include our goals, history and track record of Solar Car racing over a period of at least 10 years.

The Solar Car project aims to increase student education uptake in the fields of engineering and renewable energies through established curriculum project work. The project will help to bring greater awareness and exposure of TAFE SA, and our sponsors, on the world stage.



Tech Crew and Management group settle on the new design

## Executive Statement

TAFESA Adelaide North Institute (TANI) has been involved in renewable energy for at least the last 10 years. With a particular focus on solar energy, TANI has participated regularly in the Darwin to Adelaide Solar Challenge with locally built and commissioned vehicles.

TANI's reputation with respect to renewable energy training has been further enhanced with the completion of a Renewable Energy Centre during 2007. Our solar vehicles serve as excellent resources for student learning. This, in turn, has led to the formation of a broad series of networks all with the common interest of applications of renewable energy. These relationships have been with secondary schools, Universities, industry and enterprises.

During previous solar car projects, the emphasis has been to use internal and external volunteers and to integrate the project into existing educational programs. This would ensure maximum opportunity for student involvement whilst keeping the expenditure balanced with Industry donations and sponsor support. This is still the main premise under which the present project will be conducted. Additional fund raising support has been employed with the engagement of an external marketing enterprise.

The establishment of functional groupings for this project will provide clear governance and direction for every aspect of this project. These groupings will have commercial, educational, construction, marketing and racing focuses. Each of these groups have objectives to meet including regular reporting of activities, financial control and adherence to safety requirements.

By embedding the solar car project fully into existing programs, the salary cost has already been accounted for with additional work relying on an after hours, voluntary basis.

The broad timelines will see the completion of a modified vehicle by the end of June 2011. This vehicle will then be commissioned and field tested in preparation for the Darwin to Adelaide Solar Challenge in October 2011. As an ongoing requirement, sponsorship and marketing will provide financial income through the marketing partner.

The main objectives for the solar car project are to design and build a reliable vehicle which will complete the 2011 Darwin to Adelaide Solar Challenge in the most cost effective manner. The environment in which this project will be conducted will adhere to all sound measures of safety, student participation, team work and cost efficiency. Underpinning all of this will be a sense of purpose and enjoyment!

(from the TAFE SA Solar Car Business Plan \_ Aug 2010)



## Mission

To fully immerse renewable energy technologies into educational program delivery resulting in the economic construction of a solar car which will successfully compete in the World Solar Challenge 2011.

## Vision

TAFE SA staff members are committed to providing training and training experiences relevant to industry and community expectations with interests in renewable energy.

We value our 10-year history of successful solar racing and we are passionate about providing ongoing development of skills, knowledge and attitudes in sustainable energies to our students, which will ensure benefits for future generations.

We recognize the direction set by the SA Strategic Plan in terms of skilling our workforce for renewable energy industries and raising society awareness of their roles and responsibilities to contribute to our environment. We are therefore committed to ensure that sustainability considerations are included in all aspects of our delivery. The solar car project fulfils these requirements through education and promotions.

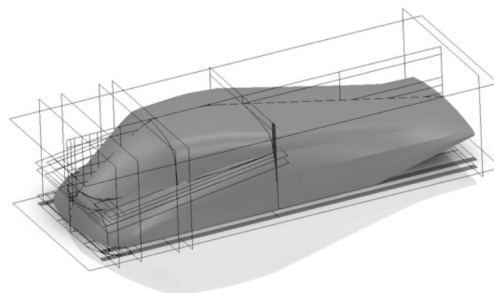
The Solar Car project will re-enforce the TAFE SA Sustainability Strategy and Action Plan:

*“TAFE SA has a pivotal role to play in the development of sustainable South Australian workforces through the provision of training programs and services that meet the current and future needs of key stakeholder groups. It also has a vital role to play in the creation and diffusion of innovative products, processes and practices across its areas of industry focus”*

TAFE SA will continue to develop close relationships with industry and enterprises in all aspects of renewable energy with the aim of continuing to build TAFE SA's reputation as a leading provider in the renewable energy sector. It is envisaged that as we achieve this we assist to raise the profile of these related enterprises.

## Design statement

Design and build a solar car that meets the new World Solar Challenge specifications (Technical Regulations 2011) at lowest cost using technology available to the wider community. Field a vehicle with sufficient reliability and efficiency to complete the race successfully



# History of TAFE SA Involvement

## **2000**

During 2000 it was clearly identified that renewable energies needed to be included into our educational delivery. Research indicated that Uni SA had built a solar car which contained a lot of the renewable themes applicable to our courses. An approach was made to Uni SA who invited TAFE SA to form a consortium with the university and three secondary schools to develop and build an additional solar vehicle.

## **2001**

TAFE SA, with the consortium, was able to construct a vehicle based on the moulds from the Uni SA vehicle. Since Uni SA named their vehicle Ned, TAFE SA aptly named theirs Kelly. This vehicle was prepared in time to compete in the World Solar Challenge 2001. The World Solar Challenge is staged every two years and runs from Darwin to Adelaide.

## **2002**

Kelly participated in the west to east event, SunRace 2002, which followed a route from Adelaide through Mildura, Melbourne and Canberra, finishing in Sydney at the Opera House.

## **2003**

The SunRace provided an excellent opportunity to further field test and refine Kelly and this experience enabled Kelly to successfully complete the 2003 World Solar Challenge achieving FIRST PLACE in the production class. The total field was 22 cars of which 14 completed the course.

## **2005**

Continual refinements were made to Kelly resulting in second place in the Production Class. 20 cars competed with 15 completing the course in the 2005 event. There was never full integration of Kelly's development into educational programs, the project support relied on an all volunteer basis. Volunteers came from TAFE SA staff and interested outside parties, including secondary school staff and students, university and TAFE students.

## **2007**

There were changes in the World Solar Challenge race specifications in 2007. This placed Kelly in a class where competing vehicles had multi-million dollar investment budgets and used cutting edge technologies. Despite this high level competition Kelly still made seventh place overall with older technologies. 38 cars entered and 18 completed the course.

## **2008**

By this time Kelly had competed in four World Solar Challenges and had more than adequately served as a promotional vehicle for TAFE SA, a test bed for new technologies and, of course, as an educational learning resource for TAFE SA and secondary school students. It was therefore decided to design and build a new vehicle.

The intent of the new project was to focus on both the energy efficiency system and the drive train, and to integrate students into the project. The resultant vehicle specified extremely efficient solar cells which require a narrow angle of incidence to maximize power absorption in the cells. It therefore required an array which can be adjusted to the angle of the sun during all hours of sunlight. This dictated specific design challenges resulting in a design which was very different from Kelly. Due to the design complexities there were several major delays in prototype construction. Implementation of the specific solar cell technology of choice also proved problematic.

This new vehicle was named Solar Spirit of Australia.



## **2009**

Development of the new vehicle prototype continued during 2009 and repeated delays prevented the vehicle from being ready to race. There was not sufficient time to complete, field test and train drivers ready to compete safely. TAFE SA has a commitment to ensure duty of care is applied in all aspects of operations and was very much aware of the impact of risk balanced with commitment to staff and sponsors.

However, while TAFE SA was constructing the new vehicle, Kelly was contracted to the high school group Energy Education Australia who were preparing to enter the 2009 competition. During this time TAFE SA provided extensive technical support to Energy Education Australia to ensure they could meet stringent time lines. This team successfully completed the 2009 Challenge but at a cost to the Solar Spirit project.

## **2010**

This year finds us with renewed commitment and energies directed towards fulfilling our project goals.

Work is embedded into curriculum programs. Design and construction are on track.

# Exposure

We will promote the TAFE SA Solar Car Project by an integrated public relations and marketing communications strategy including:

- Public displays
- Sponsor activities
- Web presence
- Competitions and awards
- Communications and PR activities



## **Public Display**

### *Internal*

Classroom or corridor display boards containing progress photos, diagrams, schedules, media clips, physical components, movie clips.

Foyer displays at various campuses with display boards as above and vehicle when suitable

### *External*

- Attend selected expos with the display and vehicle
- Attend selected high school events
- Participate in public events like the Clipsal or street events
- Combine crew training runs with PR activities
- Use web site to provide relevant information to attract interest
- Keep regular presence in news stories on live to air TV and press

## **Sponsor Activities**

- Ensure sponsors are kept up to date with the newsletter
- Run specific activities for the sponsors
- Take the display and vehicle to sponsors' own events
- Tailor web features to feed relevant info to sponsors sites
- TAFE managers specifically communicating with sponsors to maximize benefits for project and for training
- Make video interviews of sponsors for web site and web TV
- Run a short info profile story of each sponsor in the regular news letters
- Get sponsors staff, management and leaders involved in the project via the workgroups



## **Web Strategy**

Our web presence includes the TAFE Solar Car web pages and SolarSpiritAustralia.com The later is currently our major operational presence for sponsorship, information and revenue raising.

We intend to have a core group of TAFE staff contributors to this site. This will minimize risk and maximize the freshness of content, this being the single most influential factor in attracting multiple return visits to the site. In turn this will maximize revenue and other support.

We will create a facility on the web site to present technical information, progress reports and photos. This will provide an optional RSS feed. Sponsors and other interested parties will use this to be notified each time fresh information is posted on the site. More return visits to the web site will be encouraged by this feature.

Leverage and use the new TAFESA website and the TAFESA Lead Centre for Sustainability Website for web presence and marketing.

Use online and direct email marketing to promote the car, source donations and to register interest in training opportunities.

Use Web to promote participation and involvement in the project

## **Competitions and Awards**

Great marketing leverage can be gained through industry recognition gained by entering established competitions run by industry, government and community such as the Engineering Excellence Award for Education and Training (Engineers Australia), student skills competitions and by attempting world records such as a west east challenge.

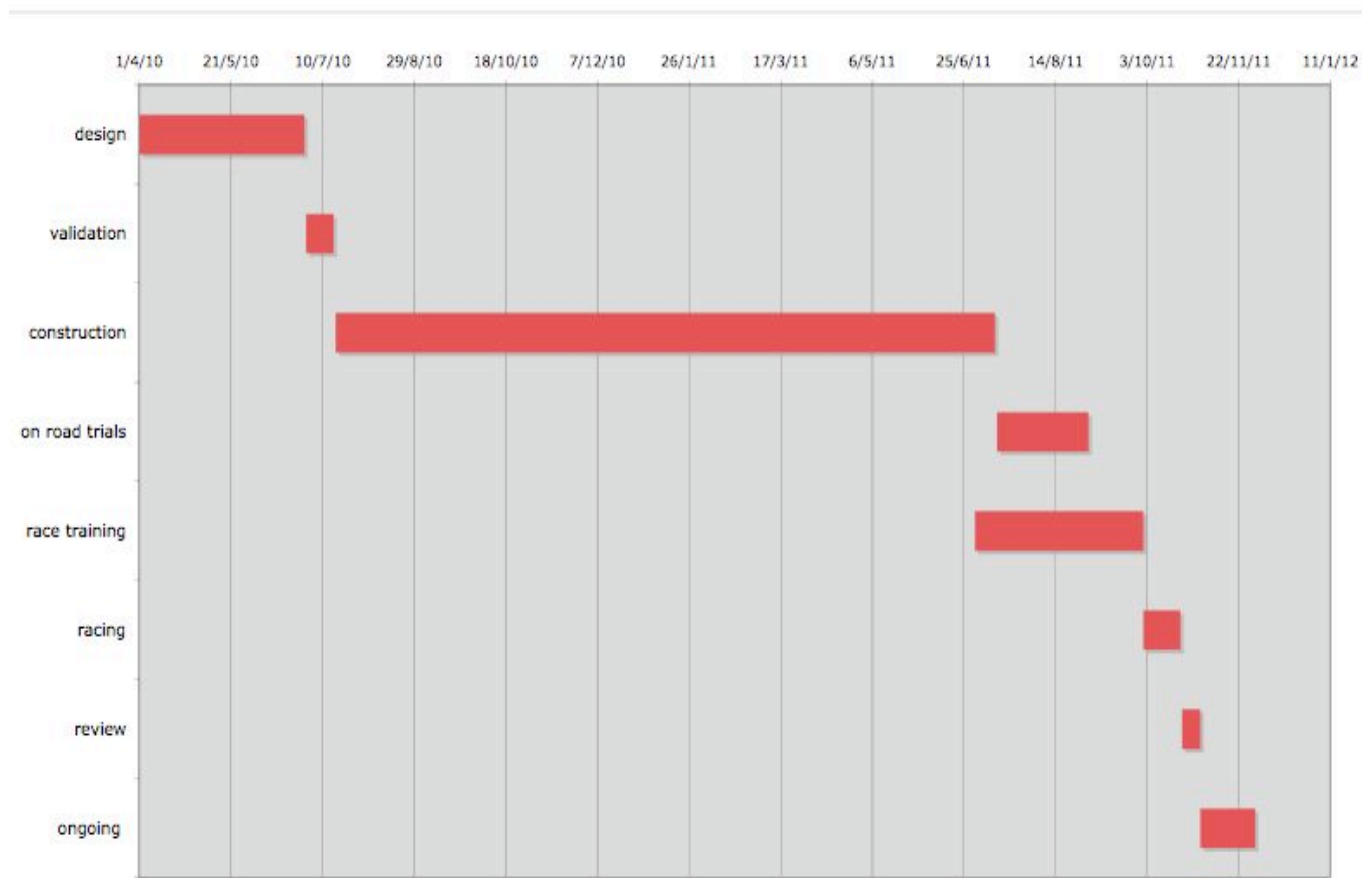
Use the web and social media to promote competitions and awards.

## **2007 exposure example**

The Kelly crew attracted media coverage as follows:

Television	at least five appearances	estimated value	\$20,000
Radio	3 interviews and discussions	estimated value	\$7,000
Print	multiple news and magazine	estimated value	\$30,000
Online	multiple web exposure	estimated value	\$6,000
Public	shows, science events	estimated value	\$6,000

# Timelines



There is a range of opportunities through which your organization can become linked in supporting the TAFE SA Solar Car effort.

Further information is available at [solarspiritaustralia.com](http://solarspiritaustralia.com) and by calling:

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