

The Hampshire Solar Car Challenge 

2003

Project Report

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September 2003

The Project

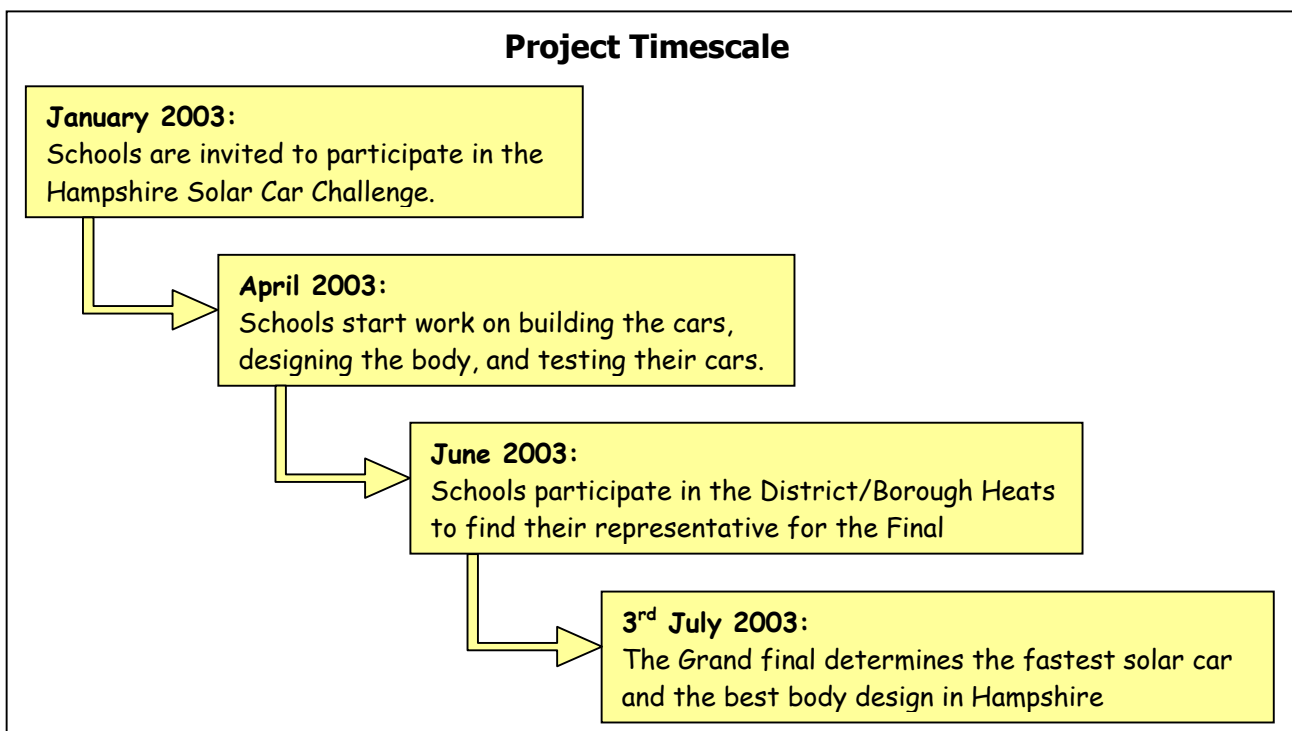
The *Hampshire Solar Car Challenge* was designed to raise awareness of the concept of solar energy in an interesting and fun way. It would achieve this through competition and problem solving. It was targeted at key stage 2 primary school pupils, with the potential to use the project to get information about renewable energy out to the pupils, the schools, the parents and, through the media, to the general public.

The participating schools had to construct a model car, and design its body. The cars were powered only by the sun, through a photovoltaic (solar) cell. The solar cell, motor, gearing and wheels for 2 cars were supplied to the school, but the pupils then had the freedom to design the best cars.

There were two categories to the competition: the fastest car and the best body design. The fastest car entry would compete in a flat race over 20 metres, and therefore needed to be designed purely for speed. The best body design gave the pupils an opportunity to use their imagination in creating a body for the car. As long as the car would still move, they were free to try anything.

The schools in each participating district competed in a heat with the winners going through to the Hampshire final.

Following the success of the pilot project in the 2001-2002 school year, 'The Challenge' was run again in 2002-2003. This report gives details of this second year.



The Cars

The basic solar cars measure approximately 180mm x 100mm when fully constructed. They were supplied to the schools in kit form. These kits are the invention of the Plugging Into The Sun® initiative of the Schools & Home Energy Education Project. The Project has been creating and successfully piloting renewable energy and energy efficiency resources that teach pupils key concepts in science and design & technology in an exciting and fun way, encouraging pupils to use their own initiative, innovation and mechanic skills.

The pupils assembled the kit, then designed and built the body, with a choice of shape, material, and decoration. For the 'Fastest Car' entry, the pupils tested the cars with different body designs and materials, to find the combination that would produce the fastest possible car.

For the 'Best Body Design', schools were free to use their imaginations to produce wacky, fun, and exciting creations out of the basic car kit.

Some of this year's resulting designs are shown below.



Body Designs (clockwise from top left): Golden Arrow, Berrywood Primary; Devils Dragon, Oak Meadow County Primary; Solar Flash, Woolton Hill Junior; Rainbow Phoenix, St John's CE Primary; Flamtastik, Poulner Junior; Cody Flier, Samuel Cody; Braishfield Bull, Braishfield Primary; Jimmy Jag, St Bede Primary

Boroughs and Districts Involved

Eight districts within Hampshire took part in this year's Hampshire Solar Car Challenge. The officers involved included both HECA Officers and Sustainability Co-ordinators.

The Home Energy Conservation Act (HECA) requires local authorities to reduce the amount of energy being used within homes and to cut emissions of the 'green house gas' carbon dioxide, a major cause of climate change. Local Councils in Hampshire are involved in a large range of projects to improve energy efficiency and raise awareness within the community on how energy use can be reduced.

The Councils in Hampshire also recognise the value of renewable energy and promote solar energy as a cost effective and long term source of sustainable power.

Much of the progress towards sustainability depends on changing habits. This needs both information and inspiration, both of which are provided by this project.

Aiming the project at 8-11 year-olds gives them early experience of solar power and how it works, helping them become more confident about a technology that is likely to be more common through their lives. The added benefits of the project also involve team-working skills, co-operation and accountability - all social skills that are needed to aid our sense of citizenship. It also allowed the Councils involved to develop closer links with their local schools.

The other benefit of working with Children on the project is the additional media attention it attracts. This is invaluable for getting the message across to a much wider audience.

The Districts participating in the Hampshire Solar Car Challenge 2003

- Basingstoke & Deane Borough Council
- Eastleigh Borough Council
- Fareham Borough Council
- Gosport Borough Council
- New Forest District Council
- Rushmoor Borough Council
- Test Valley Borough Council
- Winchester City Council

Participating Schools

Participation in the *Hampshire Solar Car Challenge 2003* was limited to 8 schools in each authority area. These were filled on a first-come-first-served basis. Interest in the project varied between authority areas, with between 4 and 11 schools expressing an interest in taking part.

Some of the schools subsequently dropped out of the project, due to time constraints or unforeseen pressures. A total of 46 schools took part in the district heats, as listed below. Of these 23 had competed last year.

Schools Participating in the Hampshire Solar Car Challenge 2003

Basingstoke & Deane

- Chineham Park
- Great Binfields Primary
- Oakridge Junior
- St.Bedes Catholic Primary
- St.John's (Aided) Primary
- St.Martins CE Aided Primary
- Woolton Hill Junior

Eastleigh

- Berrywood Primary
- Bursledon Junior
- Crescent Primary
- Kings Copse Primary
- St James Primary

Fareham

- Locks Heath County Junior
- Ranvilles County Junior
- Oak Meadow County Primary

Gosport

- Alverstoke Junior
- Grange Junior
- Newtown Primary
- Peel Common Junior
- St John's CE Primary
- Woodcot Primary

New Forest

- Hale Primary
- Pennington Junior
- Poulner Junior
- St Lukes Primary
- Western Downland Primary

Rushmoor

- Farnborough Grange Infants
- Fernhill Primary
- The Samuel Cody School
- South Farnborough Junior
- St Michaels CE Junior
- St Patricks Catholic Primary

Test Valley

- Amport Primary
- Braishfield Primary
- Grateley Primary
- Knighwood Primary
- Shepherds Spring Juniors
- Vernham Dean Gillums Primary
- West Tytherley C of E Primary
- Wherwell County Primary

Winchester

- Itchen Abbas Primary
- John Keble Primary
- St Bede CE Primary
- St Peter's Catholic Primary
- Western Primary
- Wickham Primary

The Heats

The weather for the heats in June was very varied. Whilst some of the heats enjoyed the heat and sun, others were more overcast. A couple of the heats endured a rainy start, clearing up for the racing, but only one heat had to be postponed due to bad weather.

Whatever the weather, the teams all arrived full on enthusiasm, and determined to show the results of their hard work to the assembled crowd.

The races were highly exciting, with some closely matched cars. The overcast heats proved that the solar cells still produce power even without full sun. The cars all moved swiftly, with the winners achieving times of between 38 and 47 seconds for the 20m run.

In the Best Body Design category, judging was a tough job, as teams had worked hard again this year to produce some imaginative, original and stunning designs. But a winner in each heat was eventually chosen, and along with the race winner, would represent their district at the Hampshire final.

District Heats

- 4th June: Rushmoor and Basingstoke & Deane
- 5th June: Test Valley
- 9th June: Gosport and Fareham
- 17th June: Winchester
- 19th June: New Forest
- 25th June: Eastleigh



The Hampshire Final

The day of the final, 3rd July, brought fine, sunny weather for the Solar Car Challenge. The teams arrived at Thruxton Karting Circuit from around the county, each eager to compete with the best of the rest.

This year the army (Defence Logistics Organisation) was on hand to keep the young inventors in check, and started the day with marching on the Kart track. Later they raced their own solar powered cars on the track.

With a few minor adjustments, all the teams passed the scrutineering stage, and competed in two hotly contested heat races. This determined the four teams who would line up for the final: Western Primary from Winchester, Locks Heath Primary from Fareham, St Johns Primary from Gosport and Grateley Primary from Test Valley.



After lunch Quantum Theatre for Science were on a mission to save the planet from Climate Change and pollution with a performance of 'Destination Earth'. Later David Garlovsky, inventor of the cars, talked about his new inventions for solar power including solar powered boats.

Judging of the Best Body Design Competition was carried out by Tom Jones, the Thruxton Circuit Manager, Sue Element from event sponsors GOSE and Sarah Dodd from sponsors B&Q. The judges were impressed with the high standard of design from all entrants. New Forest school Poulner Junior was awarded first prize for 'Flamtastic', with the colourful 'Devils Dragon' from Oak Meadow Primary coming a close second.



At last it was time for the nailbiting final. The teams lined up and as the claxon sounded the cars got underway. From an early stage Grateley Primary was ahead of the other competitors, completing the course in a speedy 20.57 seconds, shaving 7 seconds off the record from last year. Locks Heath came in second, with St Johns and Western Primary finishing just half a second apart to take third and fourth place.

For the winners this year, exciting renewable energy prizes were handed out, including a full-size solar panel with education pack, and solar power construction kits. Each of the winners also got an exciting ride in a 4x4 vehicle on a purpose built track.

The Sustainable Energy Fair



Amongst the activities on offer during the Hampshire final was the opportunity to visit the Energy Fair. This had the aims of:

- Disseminating examples of best practice in renewable energy for both the children and adults attending the final.
- Supporting the innovative Solar Car Challenge to highlight other uses of alternative energy.



The Fair comprised a number of stands providing information and advice on all aspects of sustainable energy including interactive displays such as a solar fountain and solar water heating demonstration; a car fuelled by used cooking oil and electric bikes which visitors were able to enjoy riding.

The fair also provided opportunities for networking amongst the exhibitors and organisers and provided an interesting background for raising awareness on renewable energy to all visitors.

The fair supported the Solar Car Challenge well, providing an introduction to the wider area of sustainable energy for both children and adults. The interactive exhibits further provided entertainment for the children between races. It enabled the children and schools to clearly see that renewable energy works in many different ways and helped them to see how their hard work on this solar car project is relevant to everyday life.

Outcomes

505 children from **46** schools have participated in the project this year.

596 people attended the district heats. **165** people attended the Hampshire final, including 126 children, from 15 schools.

Over **20** articles have been run in local papers, the project has been mentioned on **2** local radio stations, and Meridian TV covered the final event.

The average time the schools spent building and testing the cars is **10** hours.

As a result of participating, the schools have stated that the children have learnt about:

- solar and renewable energy
- team-working and co-operation
- Design and technology skills, including interpreting a brief
- The process of construction, testing, and evaluating
- How to read, interpret and follow instructions
- Problem solving
- Perseverance and dedication
- Working to a time limit

In addition the schools said the project had improved morale in the school, helped the children's self-confidence, and enriched the curriculum.

When asked if they would participate in the Solar Car Challenge again, **96%** of the schools participating this year answered 'yes'.

Quotes:

"We didn't expect to win anything... It was just great taking part and learning about it all." (Team members)

"I really enjoyed making the car. I learnt a lot." (Team member)

"A focussed competition like the Solar Car Challenge, which is different from normal learning, really excited the children and their learning in DT and the creative arts snowballed." (Headteacher)

"I am now suffering Solar Car withdrawal symptoms. It was a wonderful project! The children are now demanding a glass case for their cars." (Teacher)

"What an extremely worthwhile day and project." (Parent helper)

"Please send application forms ASAP!" (Teacher, referring to next year's challenge)

Press Coverage

Just a few of the newspaper articles:



SOLAR RACING: Schools gather at Thruxton for the Hampshire Solar Car Challenge.

Pupils hoping for sunshine in the great solar-powered car challenge



The team from Oak Meadow Junior School Fareham with their solar-powered car, The Devils Dragon. PICTURE STYLING: GUY RAY

Solar racers feel the heat

By Andrew Napier
andrew.napier@solon-echo.co.uk

THEY didn't go quite as fast as the cars that normally race around Thruxton, but the Hampshire Solar Car Challenge produced its fair share of thrills and spills.

The grand final was held at the motor racing circuit with all the cars powered by the sun's energy. Participating schools had to design and construct a model car powered by a solar cell.

The solar cell, motor, gearbox and wheels for two cars were supplied to the schools, and the pupils then had the freedom to design the best cars. As long as the car still moves through the solar power, they were free to try anything.

Entries competed in a race over 20 metres. Schools participated in heats across the county with the winners going through to the Hampshire final.

The winner of the Fastest Car title was Grateley Primary School near Andover, with Locks Heath Junior School coming second and St John's Primary School in Gosport, third. Fourth was Western Primary School in Winchester.

The Best Body Design prize went to Poulner Junior School near Ringwood.



FASTEST CAR: Lauren Kelly and Charlotte Kearley of Grateley Primary School win the race title.

A TEAM of pupils from Samuel Cody School, Farnborough, raced away with all of the cups and prizes in the fastest car and most creative body design categories in the district heat of the Hampshire Solar Car Challenge.

Youngsters from Rushmoor schools battled against the weather to race their model solar cars at Grange Athletics Track in Basingstoke for a place in the finals, to be held at Thruxton Race Circuit Thursday.

Although the weather overcast and showery for most of the racing, the ingenuity of the designers won through.

PUPILS from Oak Meadow and Locks Heath primary schools will be representing Fareham at the Hampshire Solar Car Challenge 2003 finals.

At the borough's competition heat Locks Heath won the fastest car event and Oak Meadow took the

by Victoria Taylor
The News

about renewable energy sources such as solar power. Good luck to all teams from Fareham and I hope that all schools taking part have a great day out together.

Solar stars reach final

Flare, designed and built by the pupils, clocked the fastest time to earn a place in the Hampshire finals.

Farnborough Grange Infant School, which had the youngest team in the Hampshire competition, came a close second with their car 'Solar Storm 2'.

The 'Most Creative Body Design' category, judged by Rushmoor Mayor Cllr Fran Rust, Basingstoke Mayor Cllr

Les Murrell, Rushmoor Council's Local Agenda 21 Co-ordinator, said: "The children really enjoyed building and racing the cars.

"The Hampshire Solar Car Challenge for Schools provides excellent opportunities for our local primary schools to learn about environmental issues renewable energy sources such as solar power, team working and engineering, while having loads of fun too."



RUNNERS-UP: Locks Heath pupils.



GOSPORT: Children will pit their ingenuity against each other when they race their own solar-powered cars.

Next stop, Formula One



FERRARI's days at the top of England Primary, St. Peter's Roman Catholic Primary and Western Primary schools could be numbered.

In a hotly-contested final, Barham and we're definitely going to win the final!"

The day also saw an arts performance as part of the event.

It's amazing said Rachel Dawson: "We built the car a lunchtime with Mrs. Barham and we're definitely going to win the final!"

The day also saw an arts performance as part of the event.

School pupils rise to solar car challenge

By Paul Hobson

RED HOT Popley pupils lit up the Basingstoke heat of the solar car challenge.

The team from Chisham Park Primary School, in Shakespeare Road, took the award for both fastest car and best body design at the event at the Down Grange sports complex.

Under the guidance of teacher Gwen Clifford, they will now represent the borough in a grand final at Thruxton Karting Circuit.

Schools had been asked to construct a car after being given solar cells, a motor, gearbox and wheels.

The fastest car category comprised a race over 20 metres with the models powered purely by solar energy.

The competition was jointly organised by Basingstoke Council and seven other local authorities in Hampshire.

The local authorities involved in running this annual event intend to promote solar energy and raise awareness of other issues such as renewable energy and pollution.

"The solar car challenge is an excellent way of spreading the message in an interesting, competitive and fun way."

Basingstoke and Deane mayor, Gerry Teasdale.

Pupils take up solar challenge

GOSPORT: Children will pit their ingenuity against each other when they race their own solar-powered cars.

All of 12 Gosport and primary schools will fit their designs at the

Children shine in contest

BRIGHT youngsters are through to the final of the annual Solar Car Challenge.

Pupils from He Primary and Poulner Junior schools are the semi-finalists of the 2003 competition.

The task was to construct a model car, powered purely by solar energy and to make it as fast as possible.

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Hope for the sun...

SCHOOLCHILDREN in Basingstoke hope the sun shines on June 4 for the district heats of the Hampshire Solar Car Challenge.

Seven teams from local schools will be battling it out



Winners: Grateley Primary School pupils (back) Anna Mullens, Laurence Morley, Joseph Burke, Laura Pullinger, (front) Lauren Kelly and Charlotte Kearley, all aged 11.

Pupils over the moon with Flamtastik solar car

A SUN-SATIONAL solar-powered car has sent Poulner Junior School pupils over the moon, writes Laura Prudom.

After outshining the competition from schools all over the county, the team of Poulner pupils has emerged triumphant in the Hampshire Solar Car Challenge.

The solar-powered model won the best overall body design award at the finals held at Thruxton Kart Centre.

After designing the body, junior school children had to construct a solar-powered model car with special kits provided by the local council.

worked well as a team and have enjoyed the whole learning experience immensely."

Another New Forest school in the competition, Hale Primary, was also at the final after winning the Fastest Car category at the semi-finals at Applemore Recreation Centre in June.

pleased that a New Forest school has emerged as an overall Hampshire winner," said Cllr Michael Thiery, New Forest District Council's portfolio holder for the environment.

"The Solar Car Challenge is a fun way for children to learn more about the environment, design and

Grateley record breakers

GRATELEY Primary School has been crowned record-breaking kings of speed after winning the Hampshire Solar Car Challenge 2003 finals held at Thruxton Kart Centre.

At the start of the competition, each school had been given two basic kits which consisted of a body template, solar cell, motor, gearbox and wheels.

the final, which saw the youngsters scoop the Hampshire record.

"In their heat, the car ran over 20 metres in 33.5 seconds, which was marginally faster than some of the other cars she said.

Sponsors

We would like to thank all our sponsors this year who have been generous in providing money or in-kind support:

Andrew Waring Associates (Test Valley)

Asda

B & Q

British Automobile Racing Club

Defence Logistics Organisation, Monxton

Explosion Museum (Gosport)

Fleming Park Leisure Centre

Friends of the Earth (Gosport and Fareham)

Government Office for the South East

GS Building Services Ltd (Gosport)

Huhtamaki

Safeway

Thruxton Race Circuit (Test Valley)

Thruxton Kart Circuit

Waitrose

Past, Present and Future

2003 has proved another successful year for the Hampshire Solar Car Challenge. We were able to build on our experience from the 2002 pilot year, using comments from the evaluation to improve. For example:

- Clarifying and simplifying some of the rules reduced the problems of misinterpretation and helped the races to run more smoothly.
- Using wood to mark out the lanes made the cars less likely to get stuck, and brought better focus to the race.

The successes from last year's project were also continued this year:

- The schools once again showed great interest and enthusiasm for the project, using it to enhance the pupils education and skills. Many of the participating schools followed up the competition with activities such as writing guidance or reports, making further adjustments to the cars, or sharing the teams experience with the rest of the school.
- The media interest has again been great, with articles and interviews throughout the project. This has helped spread awareness of renewable energy as well as giving the schools' publicity and adding a sense of prestige in taking part.

There is always potential to improve, but this year's evaluation suggests that these are all minor improvements, such as making the instructions more child-friendly, working on better timings for the events, and the need to make clear that the competition cars should be the work of the children. We intend to improve on these in the future.

Work is currently underway in planning the Hampshire Solar Car Challenge 2004, and we are looking forward to a third successful year of solar racing.

Contacts

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