

Greenpower
INSPIRING ENGINEERS

Greenpower Education Trust
**HMS EXCELLENT
PROGRAMME 2018**
SPONSORED BY LOCKHEED MARTIN

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WELCOME

From Gavin Woodruff - Development & Partnership Officer

HMS Excellent Goblins

Welcome to our annual HMS Excellent IET Formula Goblin event supported by Lockheed Martin.

Once again this event is the first opportunity of the year to put down tools and start racing. Teams will put each other to the test in 3 challenging race formats. Regardless of the results it is a fantastic achievement to make it to an event and all participants should be proud of their efforts.

Lockheed Martin recognises this achievement and is one of the many companies who share our vision. We would like to thank them for the continued support that allows us to run the HMS Excellent IET Formula Goblin event, which is now in its seventh year.

We would also like to take this opportunity to acknowledge the significant support we receive from hundreds of volunteers and organisations from around the country. Our events would not be possible without the amazing community Greenpower is surrounded by and we all share the same vision of inspiring our young participants in engineering subjects and sustainability.

Thank you to all who attend our events for making them truly special.

Now enough from us, it's time to go racing!!!





FOREWORD

From Lockheed Martin

Advancing science, technology, engineering, and mathematics (STEM) education is a critical focus for Lockheed Martin. We know first-hand the importance of educating our young people in these areas. Our future success – and our country's technological advantage – depend on a constant supply of highly trained, highly capable technical talent.

We believe strongly that advancing STEM education requires collaboration among industry, educators, policy makers and families. As an industry leader, Lockheed Martin globally has an employee population that includes 49,000 engineers, scientists and IT professionals and we are committed to working to develop programmes that educate and inspire tomorrow's scientists, engineers and mathematicians.

To help address these challenges and strengthen the UK workforce pipeline, Lockheed Martin is proud to partner with Greenpower, who provide a range of practical, educational engineering challenges which fulfil our mission and encompass all of our values.

We wish all of the participants luck at the Goblin Event this weekend!



Event Sponsor Lockheed Martin

ABOUT GREENPOWER

The highly successful Greenpower challenge, to design, build and race a single seat electric car provides young people with a unique, hands on opportunity to engage in engineering.

This proven project uses the excitement of motorsport to inspire students from primary school through to university to excel in Science, Technology, Engineering and Mathematical studies.

The UK will need 830,000 new engineers by 2020. The best way to ignite children's interest in science and technology is through a hands-on, real life project, and designing, building and racing your own car has proved to be a very popular way of making that spark.

The project is also brilliant at fostering team work and allowing children to discover new skills and abilities, scoring highly with teachers for improving self-esteem and confidence among pupils. Independent evaluation shows that our project is one of the most successful enrichment programmes in engaging students with science and engineering and encouraging them to continue science studies later in their school and college progression.

The challenge follows this progression with challenges for 11-16 and 16+ age groups seeing a closely linked project available for senior schools, sixth forms, universities and apprentices. We are proud to have a large number of former participants now working in a wide range of engineering fields including several now working in Formula 1.



Who We Are

Greenpower Education Trust is a registered charity based in West Sussex and working with schools throughout the UK. We currently work with approximately 500 schools and 10,000 students from primary through to university every year.

There are just six full time and 2-part time staff supported by an excellent board of trustees, an amazing team of regional ambassadors and large numbers of volunteers helping in schools and at our events.



EVENT TIMETABLE

08:30 > Teams arrive

09:15 > Scrutineering

10:00 > Team briefing

10:30 > Goblin parade

11:00 > Events start – slalom and drag

13:00 > Lunch

13:30 > Events recommence

15:00 > Prize giving

Please treat this timetable as flexible, thank you.



VOLUNTEERS NEEDED

We need Volunteers like you to help at Events!

We rely on over 600 volunteers each year to help us run our race events all over the UK. If you can spare a day of your time we'd love to have your help.

You don't need any experience or expertise as we have a briefing for volunteers at the beginning of each event so you know exactly what you're doing for the day.

Volunteering at Greenpower is lots of fun, and can be very varied. From helping at registration to scrutineering, there really is a job for everyone.

If you are a parent, teacher, friend, relative or spectator and interested in volunteering at a Greenpower event. Please get in touch as we would love to hear from you.

Lunch will be provided to volunteers at every event as a way of saying thank you for your support.

We couldn't do it without you!

For more information, please contact:
E: info@greenpower.co.uk
T: 01243 552305



"Firstly I truly believe that the only way we are going to secure the next generation of engineers and scientists is by getting kids involved in activities that promote engineering, like Greenpower. Secondly it's fun! The team at Greenpower is always very welcoming and work hard to make every event a success, whatever the weather!" Julian Bond – volunteered for 5 years

AWARDS

The Slalom – A single car hits the track using their driving skills to slalom through the gates and to enter the box at the end without hitting any cones. Winner, Runner up and Third place.

The Drag Race – An exhilarating rush allowing two cars race against each other in a straight line. Winner, Runner up and Third place

For the drag and the Slalom each individual car gets the chance to race six times. The fastest time within the six races decides the results.

The Sprint Race – Requires a track wide enough to fit at least three to four cars at once, as this is a head to head challenge and a knock heat event. Winner, Runner up and Third place.

Overall Winner – This is down to a point system and is tallied up over the events throughout the day. Extra rewards are given to teams taking part in the portfolio award.

ADDITIONAL AWARDS

Best Presented Team – A well-coordinated team in both clothing and behaviour- they conduct themselves in a polite manner and are supportive and positive within their own team and towards other teams and attendees.

Best Bodywork – The bodywork is imaginative and has been designed and manufactured by the team. The team can talk to the judges about their bodywork with confidence and explain the choices they made.

Greenest Bodywork – The bodywork shows obvious use of recycled materials of any sort. A big effort has been made by the team to ensure the bodywork is as eco-friendly as possible. The team can talk about why they chose the materials and how they are “green”.

Spirit of Greenpower – This award differs at each event, but the team will stand out for a positive reason, it may be that they have been unfortunate during the race day but continued to be supportive of their team or that they assist another team with their cars.

Portfolio Award – The biggest additional awards, all submitted portfolios gain additional minus points. The portfolio should be a record of both the build and the design work – lots of bodywork designs could be included, photos of the build, any copies of sponsorship letters or any other work which has gone into the build. We like to see all of the work the team has done towards their car.

To get the full guideline on the portfolio award please visit our website:
<https://www.greenpower.co.uk/awards>

ENTRIES

No.	ORGANISATION	CAR NAME
1	Bosmere Junior School	Bosmere Cheetah
2	Bosmere Junior School	Bosmere Zebra
3	Camelsdale Primary	Camelsdale A
4	Camelsdale Primary	Camelsdale B
5	Droxford Junior School	The Drox
6	Easebourne C.E. Primary School	Snapbats
7	Four Marks Primary School	The Glad Goblin
8	Four Marks Primary School	Giggling Goblin
9	Four Marks Primary School	Feverish Four Marks
10	Four Marks Primary School	Furious Four Marks
11	Funtington Primary School	HMS Funtington
12	Harlands Primary school (Uckfield)	Harlands 1
14	Harlands Primary school (Uckfield)	Harlands 2

ENTRIES

No.	ORGANISATION	CAR NAME
15	Newick CoE	Newick 1
16	Newick CoE	Newick 2
17	Orchards Junior School	Sparkle Roadster
18	Pennthorpe School	Electro
19	Pennthorpe School	Thrasher
20	Rose Hill School	Blue Demon
21	Rose Hill School	Red Devil
22	Sharps Copse Primary School	Sharp Shark
23	St Mary's C of E, Clymping	Litty Litter
24	St Mary's C of E, Clymping	Corksical
25	Thomas A Becket Junior School	The TABinator
26	Trosnant Federation of Schools	Trosnant Tigers



GATHERING OF GOBLINS

NEW VENUE

2018 is seeing some changes to the IET Formula Goblin event calendar, spicing up the Gathering of Goblins with a venue change.

You will be hitting the famous TOP GEAR track at Dunsfold Park.

Could your team beat the STIG's lap record? Dare you to the challenge!

Don't miss out!! Register online: www.greenpower.co.uk/events/gathering-goblins to secure your team a place.





AMBASSADORS

We are currently searching for Ambassadors.

Greenpower STEM Ambassadors are volunteers who promote the project to schools in their area, support existing teams with technical or extra support for the build and helping them reach the target of hitting the race track.

Ambassadors are crucial to the sustainable growth of Greenpower and the service we provide to schools and young people throughout the country.

Your involvement can be entirely dependent on the time you are able to commit to the project and how much you want to do.

Teams to find out if you have an ambassador in your local area check out the map on our website:

<https://www.greenpower.co.uk/volunteering#id-247>

If you are interested in becoming a Greenpower Ambassador, please contact the office: info@greenpower.co.uk



GOBLIN EVENTS 2018

DATE	EVENT	LOCATION
Sat 10 Mar	HMS Excellent	Portsmouth, Hampshire
Wed 18 Apr	Ford Airfield	Ford, West Sussex
Sat 21 Apr	Plumpton College	Plumpton, East Sussex
Sat 28 Apr	Renishaw New Mills	Wotton-Under-Edge, Gloucestershire
Sat 5 May	Fife Goblins	Haddington, East Lothian, Scotland
Sat 12 May	Kirkistown Racing Circuit	County Down, Northern Ireland
Sat 19 May	Luton Sixth Form College	Luton
Sat 2 June	Seaford College	Petworth, West Sussex
Tues 5 June	Scottow Enterprise Park	Norfolk
Sat 9 June	Renishaw Miskin	South Wales
Sat 16 June	Grampian Transport Museum	Alford, Aberdeenshire
Wed 20 June	Newquay Airfield	Newquay, Cornwall
Wed 20 June	Staffordshire Activity Centre	Seighford, Staffordshire

GOBLIN EVENTS 2018

DATE	EVENT	LOCATION
Tue 26 June	Croft Circuit	Darlington, North Yorkshire
Sat 30 June	Dunton Technical Centre	Basildon, Essex
Tue 3 July	Anglesey Circuit	Anglesey
Thurs 5 July	Gateshead	Newcastle
Sun 8 July	Dunstable Park - Gathering of Goblins	Cranleigh, Surrey
Wed 11 July	Rockingham Motor Speedway	Corby, Northamptonshire
Mon 16 July	KCOM Stadium	Hull



FLAGS



YELLOW FLAG

Indicates that there is a hazard ahead, e.g. stationary car/s or recovery vehicle. Be extra careful, slow down, and only overtake other cars if there is a significant speed differential. Drivers deemed to be overtaking dangerously under yellow flags will be penalised.



RED FLAG

This means that the session is stopped until further notice. All drivers will slow immediately and continue slowly around the circuit until indicated to stop. Remain in the vehicle unless otherwise instructed.



CHEQUERED FLAG

Each vehicle will finish the race when it first crosses the timing point after the race duration measured from the first time the union flag drops at the start of the race. As cars cross the start line after they have finished they will be presented with a static chequered flag. The winning car will be presented with a waved chequered flag.



BLACK FLAG

A black flag pointed at your car indicates that you should enter the pitlane immediately, either for a Sin Bin penalty or because something is wrong with your car.



WARNING!

MOTORSPORT CAN BE DANGEROUS

Despite the organisers taking all reasonable precautions, unavoidable accidents can happen. Please comply with all instructions of marshals, notices and remain in permitted areas only.

They are concerned with your safety.

CASE STUDY

St Mary's School – Clymping Our Journey Towards HMS Excellent

How enthusiastic were the children in the New Year to start meeting up at school for their 'Golden time' Greenpower sessions on a Friday afternoon? Very!

The parents and 12 children had had an initial meeting to discuss plans, dates, who was doing what and of course – which designs would make it onto the cars!

After much deliberation the children chose names and voted on their 'best' names rather than 'favourite'. Which names best describe the design of the cars involved? It was a rather frantic and noisy session to say the least!

The whole of Years 5 and 6 (not just those involved in Greenpower) helped as part of homework to collect the materials we required. This was a massive success and we received a significantly bigger amount than we ever anticipated!!

We are still building the 'crust' for Car 1 and collecting our materials for Car 2 with two weeks to go, but in the meantime this brings us nicely to the portfolio. They have been busy writing their biographies, pieces on why we are using the materials, etc. One has even included a piece on the Greenpower Centre in Arundel!

Mechanics and the team were busy stripping and checking the car parts, the uniforms, the gloves and the helmets – finding out how to use the tools the Year 5s were unfamiliar with.

Driving practice – the exciting part! The children have thoroughly enjoyed their first session for this year with the experienced ones teaching the up-and-coming Formula 1 racing drivers how to handle the cars through sprint, slalom and drag.

Roll on Whale Island...!





WHERE NEXT?

The next steps could be the IET formula 24?

Greenpower is unique in that it offers opportunities to work on different levels of the same challenge from primary school through to university.

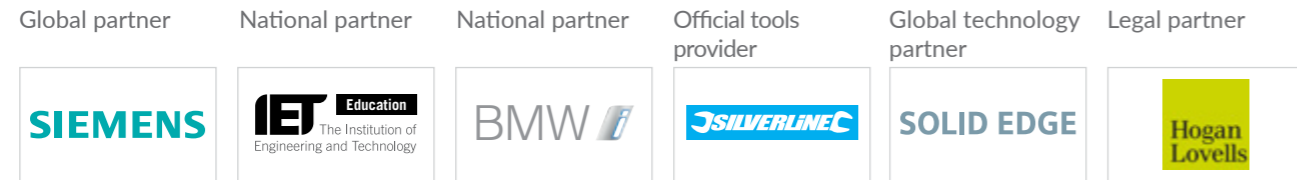
The next step up is IET Formula 24, in which, using the same motor and batteries that power the goblins, schools build their own car (or can use one of our chassis kits) which then race in a 90-minute race on one set of batteries.

Often supported by local engineers, this level of the project encourages some very exciting design and building challenges – reducing friction, learning to weld, using computer aided design and production. Our top cars will cover up to 45 miles in a 90-minute race on a very limited power source – the equivalent of 7 pence of National grid electricity.

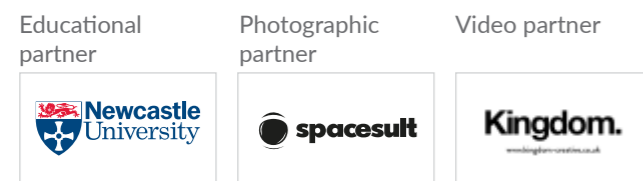
Take a look at our website to see the wide range of designs that take part in IET Formula 24. The lap of champions will be led by a championship winning F24+ car, which is the next step again (16-24 years old) which will give you a good idea of what these cars are all about.

PARTNERS

MAIN PARTNERS



PARTNERS



EVENT PARTNERS



SUPPORTERS



RECOGNISED BY



Win Silverline tools to the value of £1000!

How to win: Post your team updates, team milestones and use of Silverline tools on social media, include **#SilverlineTools**, **#GP2018** and **@Silverlinetools**. Document your social media activity in your team portfolio.

The team with the most creative posts will be announced the winner!

For more information and terms visit: www.greenpower.co.uk/awards

Good Luck!



KEY PERSONNEL & CONTACTS

Jeremy Way - Chief Executive

Amanda Barrett - Project Manager

Gavin Woodruff - Development & Partnership Officer

Olivia Procter-Moore - Project Manager

Becca Platfoot - Event Administrator

Steve Newman - Stores & Technical Manager

Lisa Roberts - Finance Manager

Leah Clack - Office Administrator

TRUSTEES

Chris Baylis

Alex Badowski

Emma Kerr

Lisa Russell

Mark Groves

Nash Vracas

Vaughan Clarke

Daniel Holme

Debbie Beale

Marcus Hall

Stuart Morgan

PATRONS

The Duke of Richmond

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Greenpower Education Trust is a charity registered in England and Wales no. 1133536
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