



## IAgrE Young Engineers' Vehicle Performance Competition RULES

### Object

Given a set of standard wheels, a battery and maximum dimensions, create a remote or radio controlled vehicle to produce the best performance on a standard track.

### Equipment

A kit of wheels and a battery will be supplied FOC to registered teams, from any discipline, together with a drawing of the test track, which is made from sheets of pegboard and a metal frame ([see attached file](#)).

### Teams

Whilst any number may be involved in the vehicle construction, only two members will be allowed to attend the actual event. In view of the prestigious nature of the competition venues, we expect competitors, and staff, to dress (smart casual) and conduct themselves in the manner of professional engineers.

### Details of Vehicle

- 1) It must fit inside a notional box 200mm wide x 320mm long x 300mm high (excluding any aerial, which may not perform any other function). It must transport its battery within these dimensions during the test run.
- 2) Up to 4 of the supplied wheels must be used – any modified wheels will be replaced with standard ones for the competition. It must be possible to replace all the tyres (either by changing wheels or tyres) in 2 minutes. All tractive force must be transmitted through the tyres.
- 3) All power (for traction and/or any actuators) must be derived from the supplied FOC battery. The battery will be similar to a NP7-12 Yuasa 12v 7Ah Sealed Lead Acid Battery with 0.187" fast-on terminals. Battery dimensions are 151mm long x 65mm wide x 97.5mm (100mm including terminals) high (Weight 2.8kg). Additional batteries may be purchased – but only one used per vehicle. Any devices to increase traction (ground effect modifiers etc) shall derive their power from the same onboard battery.
- 4) Each competing team's vehicle must be an original build by the team entering it and, in the case of teams competing in successive years, must be new. This is to be confirmed by a course lecturer or person of similar standing who must sign the scrutineering form as confirmation.
- 5) Any pressure vessel must have a safety certificate from a body recognized and approved by IAgrE.

- 6) Any energy storage device, should it fail, must do so in an intrinsically safe manner.
- 7) All entries will undergo scrutineering. Entries not meeting the above criteria, or deemed by the organizers to constitute a danger to others or the test track will be banned.
- 8) No vehicle may perform in different classes, e.g. by minor modification between teams

### **Details of Test Track**

This should conform to the [attached drawing](#).

### **Details of Test**

A laser beam will be used to determine when a vehicle has passed a pre-determined height. The laser beam will be set at arbitrary heights by the judges. Competitors can choose to compete at each height. Three failures will result in elimination. A maximum of three attempts will be allowed, but this may be reduced if the vehicle takes more than 30 seconds to complete the run.

### **Classes**

To accommodate entrepreneurial designs, there will be two classes:

- Class 1 – for those entries meeting the design criteria.
- Class 2 – For those not meeting the design criteria.

Please note, the required dimensions (as in 1. above) are obligatory in all cases. But, nevertheless deemed eligible to compete by the judges.

### **Awards**

A prize fund will be distributed at the judge's discretion.

Teams

### **Kit Availability**

Register with the IAgrE secretariat at the address below, who will arrange the dispatch of kits. These will be on a maximum lead time of 7 days.

### **IAgrE**

The Bullock Building (Bldg 53), University Way, Cranfield, Bedford, MK43 0GH

Email: [secretary@iagre.org](mailto:secretary@iagre.org)

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