

WRSC 2014 “Bottle Boat” Open Competition

Introduction

The committee of the **World Robotic Sailing Competition 2014**, invites teams to enter a “*Bottle Boat*” competition to race an autonomous motorboat or sailboat made from plastic bottles. The boat should be able to complete a triangular course comprising an upwind leg of 25 to 30 metres, rounding a windward mark, a reaching leg to a gybe mark, and a reaching leg back to the start/finish line.

The Boat

The boat must have a hull constructed from one or two plastic drinks bottles of a maximum size of three (3) litres each. In the case of a two bottle boat (catamaran), the boat’s beam cannot be wider than it’s waterline length. The boat can use either electric propulsion or wind energy to propel it around the course. The boat should use GPS and an onboard controller to navigate (for example, an Arduino Uno board).

Boats must be seaworthy, must not leak anything into the water or immerse any materials which could be considered marine pollutants, and must have reasonable protections against sinking. The WRSC committee reserves the right to refuse entry to any boat which is deemed to be unseaworthy or dangerous to the marine environment.

The organizers will not assume any liability with respect to damages resulting from a team participating in the event.

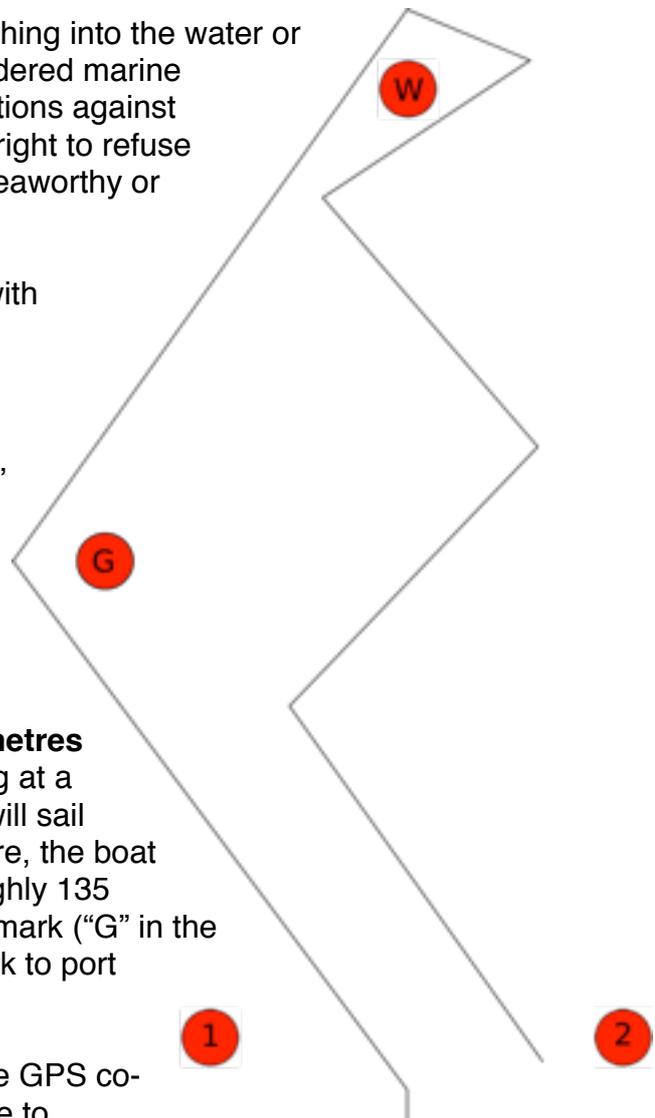
The Course

The course will be comprised of an “Olympic” triangle, with three legs. The start line will be comprised of two marks at least **10 metres** apart (labelled “1” and “2” in the diagram), and approximately perpendicular to the prevailing wind.

The first leg will be approximately **25 or 30 metres** directly upwind from the start line, terminating at a windward mark (“W” in the diagram). Boats will sail around this mark, leaving it to port. From there, the boat will continue on a reach with an angle of roughly 135 degrees to the wind until reaching the Gybe mark (“G” in the diagram). The boats will again leave this mark to port and continue back to the start/finish line.

The course will be **S-W-G-F** in that order. The GPS coordinates of each mark will be made available to competitors on the day of the event. Two or more boats may attempt the course concurrently, at the discretion of the race officer. A deliberate attempt to interfere with a competing boat will result in disqualification from the entire event.

Scoring



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Boats will be scored for successfully crossing the start line, successfully making it to each mark in turn, and successfully crossing the finish line. While a boat will be considered to have rounded a mark if it reaches within five (5) metres of the mark, boats which round the actual (physical) mark on the water will score additional points.

Boats will be scored for completing the course if they start, reach at least one of the windward or gybe marks, and cross the finish line. Boats which are propelled exclusively by wind energy will score additional points if they complete the course.

Boats which require outside assistance will be disqualified from that particular attempt. Outside assistance can mean assistance from a safety boat or person in the water, or a remote-control unit. Boats must complete the course **autonomously** (unassisted).

Scoring Task	Points
Powered by Sail only	20
Crossing the Start Line	10
Reaching the Windward Mark	15
Rounding the Physical Windward Mark to Port	5
Reaching the Gybe Mark	15
Rounding the Physical Gybe Mark to Port	5
Completing the Course	30
TOTAL POINTS	100

In the event of a points tie between two boats, the shortest completion time will decide the winner. Timing will start once the boat crosses the start line and will stop when the boat reaches the finish line. No handicap rules will be applied to completion times.

Boats will be given at least two (2) opportunities to complete the course, and the best score will count. All competitors will be given an opportunity to complete their first attempt before any second attempt will be allowed. Likewise, if time permits, a third attempt may be allowed, at the discretion of the race officer.

Entry Fee / Race Date

The first start will be on **Saturday, September 13th, 2014 at 11AM**. An entry fee of **€20** will be payable by entrants to cover costs of safety boats and prizes. Entrants do not need to be registered for the World Robotic Sailing Championship or the International Robotic Sailing Conference (WRSC/IRSC). The WRSC 2014 web site will include a separate online entry form and payment system.

Useful Links

- <http://wrsc2014.com/>
- http://en.wikipedia.org/wiki/Two-liter_bottle
- <http://www.instructables.com/id/Make-a-robot-boat-from-water-bottles/>
- <http://makezine.com/projects/two-liter-soda-bottle-boat/>