

**GUIDE BOOK**



**WIRC**

**ROBOT  
UNDERWATER**



## GAME DESCRIPTION

Underwater vehicles are vital to port & harbour security, naval and scientific exploration, underwater cleaning etc. This fun-filled and challenging competition aims to introduce students to this fascinating world so that they can explore career opportunities in this field. The competition will spur interest and promote education in this area and motivate young and aspiring engineers and scientists to further pursue this field.

The competition aims at the following long term goals

- Address shortage of skilled individuals to support advanced marine engineering in Word
- Reach more students & get them interested in the industry. Help students develop the skills
- support marine engineering early on through fun filled activities
- Complement & expand educators' knowledge and expertise in this field

## PARTICIPANT TERMS AND CONDITIONS

The competition is open to participants from Indonesia and the Indonesian Foreign participants through the following categories :

1. Junior Category [aga of Under 12 years old]
2. Senior Category [age of under 19 years old]

## BRIEF DESCRIPTION OF MISSION

- 1.The team of contestants have to design and build a remote operative vehicle (ROV).
- 2.The mission involves the picking up of as many objects (cargoes, one at a time) from the middle section of the tank and dropping them in baskets at either ends of the tank. At the end of each run the number of objects in each basket ideally should be equal. each pair (one in each basket) gets four (4) points and remaining unpaired objects in the basket get one point each. they shall be awarded double the points, as well as a bonus of two (2) points on condition that the robot(s) deliver(s) at least one (1) object into the basket.
- 3.While doing so they would have to maneuver through window frames which will be non magnetic on either sides of the tank.



## TANK SPECIFICATIONS

- The game will be played in an L-shaped tank of dimension: 1000mm x 1000mm x 500mm.
- The tank has a glass, See Figure 1 for details.



Figure 2 : Cargo Holder Dimensions (in mm)



## ROBOT SPECIFICATIONS

- The robot should at the start of competition fit in a box of 30cm (width) x 30cm (length) x 30cm (height). Any vehicle found violating the dimensions shall be disqualified immediately.

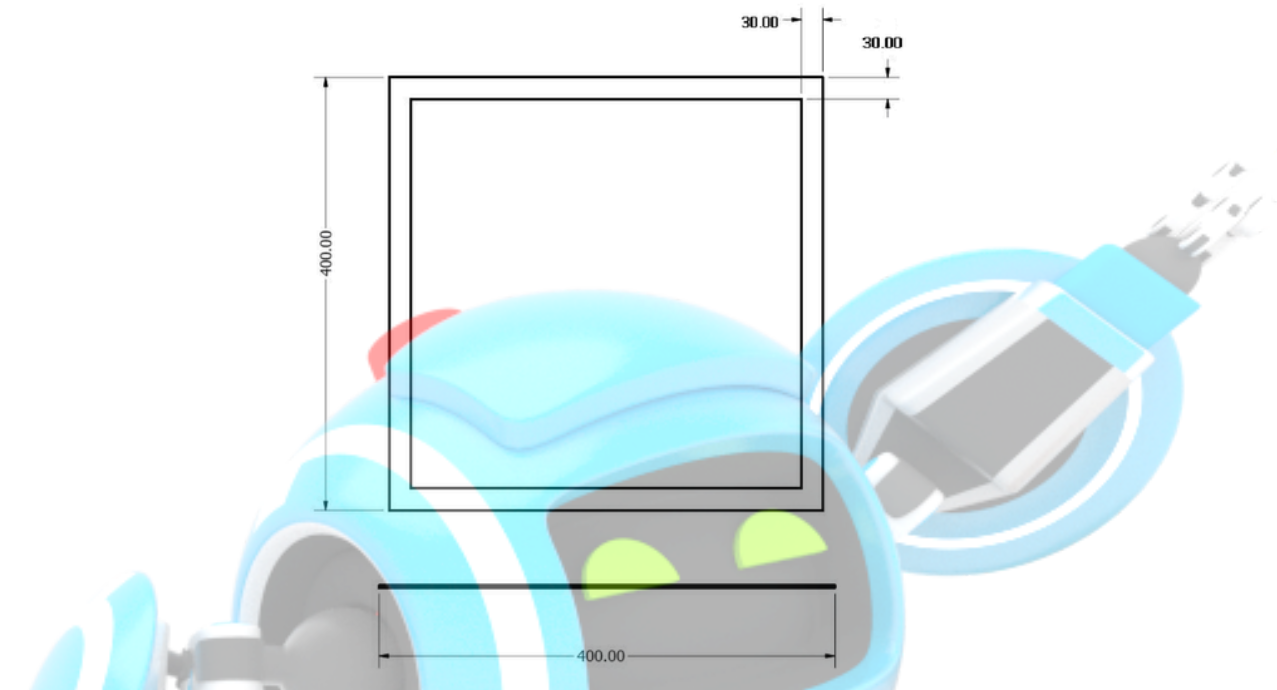


Figure 1 : Rectangular Window Dimensions (in mm)

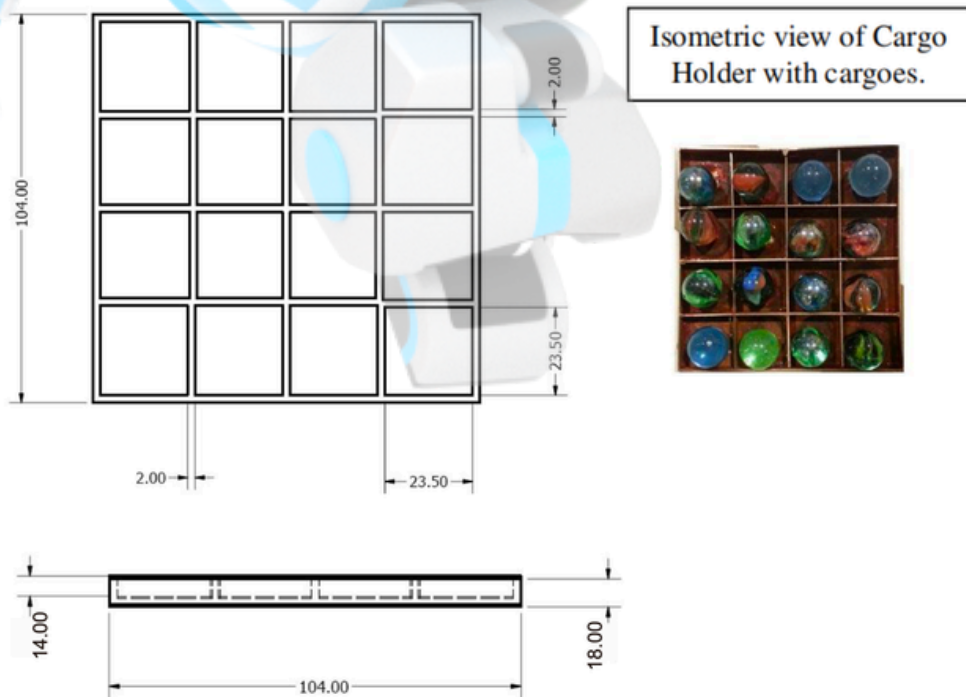


Figure 2 : Cargo Holder Dimensions (in mm)

- During any attempts, the vehicle should not exceed 40cm in any one dimension. This specification however does not prevent the initial vehicle from splitting up into multiple parts as long as the above conditions are satisfied. The latter condition above would then apply to each completely disconnected part. However, at the start of the competition, the vehicle must be assembled as a single unit.

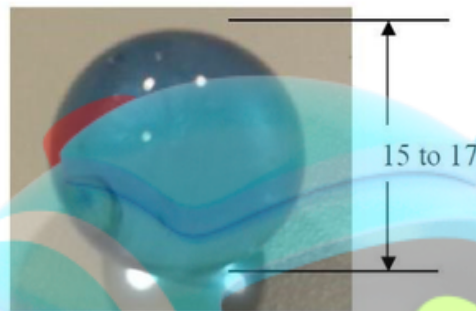


Figure 3 : Cargo Dimensions (in mm)

- Wheeled or legged machines running on the tank bottom surface will not be allowed. Any other method of propulsion is at the discretion of the builder, provided that the power source is non-polluting. Use of any kind of explosive material is prohibited. Nothing may be deposited off by the machine in the tank.

## JUDGING CRITERIA

- Points shall be awarded in the following manner:
  1. points for each pair of objects (one in each basket.)
  2. point for any unpaired object left in either basket.
- The time for the first cargo to be dropped will also be recorded, and shall be used as a tiebreaker.
- There are no penalties for hitting the tank walls or the window frame. For RC, only ONE participant is allowed to operate ONE robot. The handler / controller and robot will be paired and identified during registration and caging.

## RULES FOR COMPETITION

1. Each team will be given a competition time of 5 minutes, inclusive of setup time. Each robot is given a maximum of 3 starts within the competition time and one attempt is counted for scoring and is limited to a maximum of 4 minutes.
2. Robots shall start from either end of the competition tank. The starting line shall be 40 cm from either edge of the tank, and the robots may not be placed beyond this line at the start. Once team has chosen the starting end, all attempts shall proceed from the same position.
3. The attempt with maximum points will be considered as the team's final score. And the time recorded for the first cargo drop for the chosen attempt shall be used as tie breaker.
4. Any objections or appeals on discrepancies on points awarded must be raised within 5 minutes after the team completes its competition attempts and its points displayed on the official results board. Objections/appeals should be submitted in the official appeals form 15 to 17 available at the Reception Counter to the event chairperson. No further appeals and objections shall be entertained after the given window.
5. Judges decision is final and binding to all.
6. All robots will be caged half an hour before competition starts and would be checked for safety and cloning. Robots found to be of unsafe nature shall be disallowed.
7. The objects have to clearly fall within the basket. Objects on the basket barrier shall not be counted.
8. Any dropped object outside the cargo holder or basket will be considered out of play.
9. Each vehicle can lift only one object at a time. However while picking up objects within the cargo area, if multiple objects are picked, excess objects can be dropped back within the cargo area without penalty. In other words the vehicle should be carrying only one object once it is out of the cargo area. If multiple objects are carried at one time out of the grid area, all of them will be considered out of play.
10. Only two handlers are allowed in the competition arena for each team and only one remote controller is allowed in case of an ROV.



## CLONING

1. In accordance with the spirit of the competition, clones among the winning entries will only be awarded one prize. Clones will be identified during the "caging" procedure.
2. Clones are robots with substantially identical physical appearance and working principles. This rule will be applied strictly especially for multiple entries from the same institution.
3. When in doubt, the decision of the Judges will be final. No arguments will be allowed on cloning issues once competition starts and such arguments may disqualify the team.

