

# ROBOTUS KRIEG – Robowars

## Task:

Design and remote controlled wired/wireless robot that is capable of fighting a one on one tournament.

## Problem Statement:

Design a wired/wireless manually controlled machine which is capable of fighting a one on one battle.

## Robot Specifications:

### 1. Dimensions and Fabrications:

- a. The weight of the machine should not exceed 60 kg. In case of a wireless robot, weight will be counted as 0.8 x actual weight. Tolerance of 5% is allowed.
- b. The machine should fit in a box of dimension 750mm x 750mm x 1000mm (l x b x h) at starting point of the match. The external device used to control the machine not included in the size constraint.

### 2. Control Requirements:

- a. The wires should be sufficiently long so as to remain slack at any instant during the fight. All the wires coming out of the machine should be stacked as a single unit.
- b. In case of wireless remote controls, the remote should have at least two frequency operations to prevent interference with other team.
- c. Remote controls that are readily available in the market may also be used. Self-made remote control systems must first be approved by the organizers. Team should pair up the wireless remote with the machine before putting it into the arena.

### 3. Battery & Power:

- a. The machine can be powered electrically only. Use of an IC engine is not allowed.  
Batteries must be sealed, immobilized-electrolyte types (such as gel cells, lithium, NiCad or dry cells).
- b. The electric voltage between 2 points anywhere in the machine should not be more than 36V DC at any point of time. 230V (AC) power will be provided for wired bots.
- c. All efforts must be made to protect battery terminals from a direct short and causing a battery fire. Failure to do so will lead to disqualification.
- d. Change of battery will not be allowed during the match.

#### **4. Mobility:**

- a. Methods of mobility may include:
  - Rolling (wheels, tracks or the whole robot)
  - Walking (linear actuated legs with no rolling or cam operated motion).
  - Shuffling (rotational cam operated legs)

Any other method of mobility which leads the robot to lose contact with then ground is not allowed. (Flying, Hopping, Jumping is not allowed).

#### **5. Weapon Systems:**

- a. Robots can have any kind of cutters, flippers, saws, hammers, lifting devices, Spinning Hammers etc. as weapons, with the following exceptions:
  - I. Liquid projectiles.
  - II. Acid based Weapons.
  - III. EMP generators.
  - IV. Any kind of flammable liquid.
  - V. Flame-producing weapons.
  - VI. Explosives.
  - VII. Nets, glue or any other entanglement devices.
  - VIII. High power magnets or electromagnets.
  - IX. Radio Jamming, Tasers, Tesla coils, or any other high-voltage device.

#### **6. Pneumatics and Hydraulics:**

- a. The robot must use non-inflammable and non-corrosive fluids to power pneumatic and hydraulic devices.
- b. Maximum pressure in the tank containing pneumatic fluid should not exceed the limit of 10 bars at any point of match and there should be a provision to check the pressure in the tank.
- c. Participants must be able to indicate the used pressure with integrated or temporarily fitted pressure gauge and must have a safe way of refilling the system.
- d. Ensure that the pneumatic components are securely mounted.
- e. Entire hydraulic setup should be on board, no external input (from outside the arena) can be given to the robot for functioning of its hydraulic system.