

ROBOWARS

THE FATAL COMBAT

Introduction:

“War is the ultimate test of the brave” – Mahabharata.

In this age of ever evolving science and technology wars would be fought by warriors of metal. The ruthlessness and ferociousness of these warriors is unmatched even by the Gladiators. Zealicon brings to you Robowars- The Fatal Combat 2015.

”Can your machine be ruthless enough? Can your machine live up to its ultimate destiny of a bloody gory battle?”

Test your bravery and stand up tall against the best war machines in this battle of robots.

Task

Design and construct a remote controlled robot capable of fighting a one on one tournament.

Specifications:

Dimensions and Fabrications:

1. The machine should fit in a box of dimension 700mm x 700 mm x 700 mm (lxbxh) (± 50) at any given point during the match. The external device used to control the machine or any external tank is not included in the size constraint.
2. The machine should not exceed 40 kg (± 1 kg) of weight including the weight of pneumatic source/tank. Weight of remote controller will not be counted.

Mobility

All robots must have easily visible and controlled mobility in order to compete. Methods of mobility include:

1. Rolling (wheels, tracks or the whole robot).
2. Non-wheeled robots having no rolling elements in contact with the floor and no continuous rolling or cam operated motion in contact with the floor, either directly or via a linkage. Motion is "continuous" if continuous operation of the drive motor(s) produces continuous motion of the robot. Linear-actuated legs and novel non-wheeled drive systems come under this category.
3. Jumping and hopping is not allowed.
4. Flying (using airfoil, helium balloons, ornithopters, etc.) is not allowed.

Robot Control Requirements

1. The machine can be controlled through wired or wireless remote. Refer below for further details on battery and power.
2. The machines using wireless remote must at least have a four frequency remote control circuit or two dual control circuits which may be interchanged before the start of the race to avoid frequency interference with other teams. The case of any interference in the wireless systems will not be considered for rematch or results.
3. Remote control systems from toys might be used. Remote control systems available in the market may also be used but the participants must have dual frequency receiver-transmitters.
4. Non standard or self made remote control systems must first be approved by the organizers.

Power& Battery

1. The machine can be powered electrically only. Use of an IC engine in any form is not allowed.
2. A DC supply of 24 V shall be provided to each team during the match.

3. The electric voltage (from battery or supply) between 2 points anywhere in the machine should not be more than 24 V DC at any point of time during the match.
4. Every match will last upto 3 mins till semi-final matches and will be 5 mins for final match.

Arena (5m x 5m x 1m)



Weapons Systems

Robots can have any kind of magnetic weapons, cutters, flippers, saws, lifting devices, spinning hammers, flame thrower etc. as weapons with following exceptions and limitations:

1. Any kind of explosive or intentionally ignited solid or potentially ignitable solid.
2. Nets, tape, glue, or any other entanglement device.

3. High power magnets or electromagnets.
4. Radio jamming, tazers, tesla coils, or any other high-voltage device.
5. Tethered or un-tethered projectiles.
6. Spinning weapons which do not come in contact with the arena at any point of time are allowed. In no case should the arena be damaged by any bot. The competition will be played on a knock-out basis. In case of damage to the arena, the bots will be disqualified immediately.

Criteria for Victory:

1. A robot is declared victorious if its opponent is immobilized.
2. A robot will be declared immobile if it cannot display linear motion of at least one inch in a timed period of 20 seconds. A bot with one side of its drive train disabled will not be counted out if it can demonstrate some degree of controlled movement. This rule will also apply to any robot that becomes trapped by any part of the arena or arena hazards.
3. In case both the robots remain mobile after the end of the round then the winner will be decided subjectively.
4. A robot that is deemed unsafe by the judges after the match has begun will be disqualified and therefore declared the loser. The match will be immediately halted and the opponent will be awarded a win.
5. If a robot is thrown out of the arena the match will stop immediately, and the robot still inside the arena will automatically be declared as the winner.
6. Robots can not win by pinning or lifting their opponents. Organizers will allow pinning or lifting for a maximum of 20 seconds per pin/lift then the robots will be instructed the attacker to release. If, after being instructed to do so, the attacker is able to release but does not, their robot may be disqualified. If two or more robots become entangled or a crushing or gripping weapon is employed and becomes trapped within another robot, then the competitors should make the timekeeper aware, the fight should be stopped and the robots separated by the safest means.
7. Points will be given on the basis of aggression, damage, control and strategy

8. **Aggression** - Aggression is judged by the frequency, severity, boldness and effectiveness of attacks deliberately initiated by the robot against its opponent. If a robot appears to have accidentally attacked an opponent, that act will not be considered aggression.

Control - Control means a robot is able to attack an opponent at its weakest point, use its weapons in the most effective way, avoid Arena Hazards, and minimize the damage caused by the opponent or its weapons.

Damage - Through deliberate action, a robot either directly, or indirectly using the Arena Hazards, reduces the functionality, effectiveness or defensibility of an opponent. Damage is not considered relevant if a robot inadvertently harms itself. Also, if a pressure vessel or a rapidly spinning device on a robot fragments, any damage to the opponent will not be considered "deliberate".

Strategy - The robot exhibits a combat plan that exploits the robot's strengths against the weaknesses of its opponent. Strategy is also defined as a robot exhibiting a deliberate defense plan that guards its weaknesses against the strengths of the opponent. Strategy can also involve using the Arena Hazards to gain an advantage.

NOTE: Qualification of a robot to next level is subjective and totally on the decision of the judges.

Safety Rules

Compliance with all event rules is mandatory. It is expected that competitors stay within the rules and procedures of their own accord and do not require constant policing

1. Special care should be taken to protect the on-board batteries and pneumatics, robot without proper protection will not be allowed to compete.
2. If you have a robot or weapon design that does not fit within the categories set forth in these rules or is in some way ambiguous or borderline, please contact the event organizers. Safe innovation is always encouraged, but surprising the organizers with your brilliant exploitation of a loophole may cause your robot to be disqualified before it even competes.

3. Each event has safety inspections. It is at their sole discretion that your robot is allowed to compete. As a builder you are obligated to disclose all operating principles and potential dangers to the inspection staff.
4. Proper activation and deactivation of robots is critical. Robots must only be activated in the arena, testing areas, or with expressed consent of the event coordinators.
5. All participants build and operate robots at their own risk. Combat robotics is inherently dangerous. There is no amount of regulation that can encompass all the dangers involved. Please take care to not hurt yourself or others when building, testing and competing.
6. Any kind of activity (repairing, battery handling, pneumatics systems etc.) which may cause damage to the surroundings during the stay of the teams in the competition area should not be carried out without the consent of organizers. Not following this rule may result in disqualification.
7. All the resources provided at the time of competition from the organizers should be strictly used only after the consent of the organizers.
8. Once the robots have entered into the arena, no team members can enter into the arena at any point of time. In case if fight has to be halted in between and some changes have to be done in the arena or condition of the robot(s), it will be done by organizers only.

Team Specification

A team may consist of a maximum of 6 participants. Participants can be from the same or different educational institutes.

Certificate & Prize policy

Certificate of Excellence and prize money will be given to top 2 teams. Certificates of Participation will be given to all the teams. The teams which get disqualified due to disobeying any of the competition rules will not be considered for the certificate.

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