ROBO MASSACRE

TASK

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

Dimension and Fabrication

1. The machine should fit in a box of dimension 750mm x 750mm x 1000 mm (l x b x h) 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 10 kg for light weight category and 40 kgs for heavy wieght category including the weight of pneumatic source/tank. All pneumatic tanks/source and batteries can be on-board or ff board. Weight of remote controller will not be counted.
3. At the Last stage, the bot will be subjected to 2 more hurdles apart from its own opponent.High speed rotating blades on both the corners, and a big pit in middle of the battlefield

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. Power supply can be on

board or off board. Refer below for further details on battery and power.
2. There should be binding capability between transmitters and receivers for wireless control. The remotes with such facility will only be allowed.
3. The team must have at least four frequency wireless 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.
4. Remote control systems from toys might be used. Remote control systems available in the market may also be used.
5. Nonstandard or self-made remote control systems must first be approved by the organizers. 6. Team should pair up the wireless remote with the machine before putting it into the arena.

Battery and Power

1. The machine can be powered electrically only. Use of an IC engine in any form is not allowed. On board batteries must be sealed, immobilized-electrolyte types (such as gel cells, lithium, NiCad, NiMH, or dry cells).
2. The electric voltage between 2 points anywhere in the machine should not be more than 36V DC at any point of time.
3. All efforts must be made to protect battery terminals from a direct short and causing a battery fire, failure to do so will cause direct disqualification.
4. Use of damaged, non-leak proof batteries may lead to disqualification.
5. Special care should be taken to protect the on-board batteries. If judges found that the battery is not properly protected, then team will be disqualified immediately.
6. Change of battery will not be allowed during the match.
7. Bots with onboard or offboard batteries are allowed.
8. It is suggested to have extra battery ready and charged up during competition so that on advancing to next level, you don’t have to suffer due to uncharged battery. If teams don’t show up on allotted slot, they will be disqualified.

Pneumatics

1. Robot can use pressurized non-inflammable gases to actuate pneumatic devices. Maximum allowed outlet nozzle pressure is 10 bar. The storage tank and pressure regulators used by teams need to be certified and teams using pneumatics are required to produce the Safety and Security letters at the Registration Desk at the venue. Failing to do so will lead to direct disqualification.
2. Participants must be able to indicate the used pressure with integrated or temporarily fitted pressure gauge. Also there should be provision to check the cylinder pressure on the bot.
3. The maximum pressure in cylinder should not exceed the rated pressure at any point of time.
4. You must have a safe way of refilling the system and determining the on board pressure.
5. All pneumatic components on board a robot must be securely mounted. Care must be taken while mounting the pressure vessel and armor to ensure that if ruptured it will not escape the robot. The terms 'pressure vessel, bottle, and source tank' are used interchangeably.
6. Entire pneumatic setup should be on-board, no external input (from outside the arena) can be given to the robot for functioning of its pneumatic system.

Hydraulics

1. Robot can use non-inflammable liquid to actuate hydraulic devices e.g. cylinders.
2. All hydraulic components on-board must be securely mounted. Special care must be taken while mounting pump, accumulator and armor to ensure that if ruptured direct fluid streams will not escape the robot. 3. All hydraulic liquids are required to be non-corrosive and your device should be leak proof.
Maximum allowed pressure is 10 bars.
4. Participant must be able to indicate the used pressure with integrated or temporarily fitted pressure gauge.
5. Entire hydraulic setup should be onboard, no external input (from outside the arena) can be given to the robot for functioning of its hydraulic system.

Weapons Systems

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

1. Liquid projectiles.
2. Any kind of inflammable liquid.
3. Flame-based weapons.
4. Any kind of explosive or intentionally ignited solid or potentially ignitable solid.
5. Nets, tape, glue, or any other entanglement device.
6. High power magnets or electromagnets.
7. Radio jamming, tasers tesla coils, or any other high-voltage device.
8. Tethered or untethered projectiles.
9. 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.

THE DECISION OF THE COORDINATORS IS FINAL AND BINDING.