



## **HELL IN THE CELL (15 Kg)**

Entry fee : Rs.450/- per bot

Team : 1 to 6

Winning Worth : Rs. 40000/-

"Get ready to cheer for the smallest warriors entering into the arena fighting to prove their presence."

Does the sound of steel bashing, steel tingle your senses?

Does the smell of burnt rubber excite you?

For all of you dreamt of living the real steel life, this is your chance to make your dreams true. Well, the wait is over, the legacy event of destruction is here! **PROJECTIONS'20** the Annual Technical Festival brings **HELL IN THE CELL** is one of the biggest **combat robotics** championship events in India with the **largest arena in the West India.**

Display your technical and strategic skills, sweat it out in the fight of your lifetime against the very best, while a hungry crowd is ready to cheer on! So, what are you waiting for? Come over and experience one of the largest events in PROJECTIONS,20. Unleash your fury, annihilate your opponent, earn the glory!

**ROUND 1: - ALL THE MATCHES WILL BE KNOCKOUT MATCHES.**

## **NOTE**

- **Team Specification** – The participants can be from same or different institutes or pass outs. Maximum of 6 members are allowed in a team.
- **Team Name** – Every team must have a name which must be unique. PROJECTIONS' reserves the right to reject entries from any team whose name it deems inappropriate, offensive or conflicting.
- **Team Representative** – Each team must specify their team representative(leader) at the time of registration. All-important communications between PROJECTIONS' and the registered teams will be done through their team representative. The team representative must give their valid contact details at the time of registration.

## **TASK**

- Design and construct a remote-controlled robot capable of fighting a tournament against another robot.

# DESIGN SPECIFICATIONS

- Weight – 15 kg, minor tolerance up to 5% maybe allowed.
- Dimension – No dimension barrier.
- Robots should be completely **Wireless**.

## MOBILITY

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

- Rolling (wheels, tracks or the whole robot).
- Non-wheeled: Non-wheeled robots have 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, but are not true walkers as defined below. Motion is “continuous” if continuous operation of drive motors produces continuous motion of the robot. Linear-actuated legs and novel non-wheeled drive systems are also allowed under this category.

## **RESTRICTIONS**

- Robots operating on pneumatic or hydraulic mechanisms are not allowed.
- Robots using fire or flame thrower are not allowed.
- Robots with jumping and hoping mechanism are not allowed.
- Use of IC engines not allowed.
- Flying (using air foil, helium balloons, ornithopters, etc.) is not allowed.

## **BATTERY AND POWER**

- The robot must be powered electrically. 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).
- The electric voltage between any 2 points on the machine should not exceed 48V DC at any point of time. Participants will have to bring their own converters for standard power supply according to Indian standards.
- Use of damaged, non-leak proof batteries may lead to disqualification.

- Special care should be taken to protect on-board batteries. If the judges find that the battery is insufficiently protected, the team will be disqualified immediately.
- The teams are suggested to have at least one extra battery ready and charged up during competition so that on advancing to the next level, they won't have to wait or suffer due to uncharged battery.

## **WEAPON SYSTEMS**

- The robots can have any kind of cutters and drums.
- These weapons are not allowed
  - Liquid projectiles (Foam, liquefied gases).
  - Any kind of inflammable liquids.
  - Weapons causing invisible damage (Electrical weapons, RF jamming weapons).
- Spinning weapons must come to a full stop within 60 seconds of the power being removed using a self-contained braking system.

# **COMPETITION RULES AND SPECIFICATIONS**

- Any team can participate in HELL IN THE CELL, PROJECTIONS'20. A team may consist of maximum of 6 participants. These participants can be from the same or different institutes and they should be able to produce their ID proofs on the day of the event.
- The match duration will be decided by the judges and all the matches will be knockout matches. The team with the maximum points will be declared as winner.

## **CRITERIA FOR VICTORY**

- A robot is declared victorious if its opponent is immobilized.
- A robot will be declared immobile if it cannot display linear motion of at least one inch in a time period of 10 seconds. A robot with one side of its drive train disabled will not be counted out if it can demonstrate some degree of controlled movement. In case both the robots remain mobile after the end of the round, the winner will be decided on the basis of points.

- Points will be given on the basis of aggression, damage, control and strategy.
- **Aggression** – Aggression is judged by the frequency, severity, boldness and effectiveness of attacks deliberately initiated by the robot against the opponent.
- **Control** – Control is judged in the terms of the ability to attack an opponent at its weakest point, using the weapons in the most effective way, and minimizing the damage caused by the opponent.
- **Damage** – Through deliberate action, a robot either directly or indirectly reduces the functionality, effectiveness or defensibility of an opponent. Damage is not considered relevant if a robot inadvertently harms itself.
- **Strategy** – The robot exhibits combat plan that exploits the robot's strength against the weakness of its opponent. Strategy is also defined as a robot exhibiting a deliberate defence plan that guards its weakness against the strengths of the opponent.

# EVENT SPECIFIC TERMINOLOGY

- **Disabled** – A robot is not functioning correctly due to either an Internal malfunction, or contact with the opposing robot or Arena Hazard.
- **Immobilized** – In the judge's opinion, a robot is not responsive for a specified period of time.
- **Knockout** – Occurs when the attack or deliberate actions of one robot causes its opponent to become immobilized.
- **Lifting** – Occurs when one robot controls an opponent's translation motion by lifting the drive mechanism of the opponent off the arena floor.
- **Pinning** – Occurs when one robot, through sheer force, holds an opponent stationary in order to immobilize it.
- **Non-responsive** – In the judge's opinion, the robot cannot display some kind of controlled translational movement along the arena floor.
- **Restart** – Occurs after a fault or a timeout has been declared and the competing robots are ready to continue.

- **Struck** – A robot is hung-up in a part of the arena, an arena hazard or an opponent, such that it is effectively non-responsive.
- **Tap-out** – Occurs when a robot's operators decide that they no longer want to continue the match and concede the win to the opposing team.
- **Technical Knockout** – Occurs when a robot wins due to immobilization of its opponent even though, in the judge's opinion, no action of the winning robot caused the opponent's immobilization.
- **Timeout** – A temporary halting of a match. Timeouts are usually called to separate robots, but can be called for other reasons as well.

## ARENA DIMENSION

- The arena is closed on all sides for safety purpose. It'll have openings in the opposite sides for putting the robots inside.
- The playing area of the arena is 28ft x 28ft x 8ft.
- The arena is made of 8mm polycarbonate sheets from all sides and the base plate is of 10mm mild steel.

## **NOTES**

- The final decision lies in the hands of the coordinator. Coordinator reserves the right to change the rounds and the rules on the day of the event.
- If a participant misbehaves or does not obey the rules and regulations of the event, event coordinators reserve the right to disqualify the participant.
- Teams should report 30 minutes prior the event.

## **FOR QUERIES CONTACT**



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