



ROBO TRACER

RULES & REGULATION

**PETROSAINS RBTX CHALLENGE
2018**

1. The Challenge

The challenge of the competition is to make a robot that can move on a given line (white on black) and pass through the designated checkpoints.

The competition area has a special place defined for the robot's operation (hereafter COMPETITION FIELD).

The participants must create an autonomous vehicle (hereafter ROBOT), that will move on the COMPETITION FIELD and do certain tasks.

The ROBOT which will start on the START line and pass through all designated checkpoints by following the given lines in the shortest time will be nominated the winner.

1.1. Definitions

1.1.1. Race clock

There are optical sensors that detect the robot's start movement.

When the robot starts off from the START line and passes these optical sensors, the timer automatically starts to count the RACETIME.

As the robot passes each checkpoint, its time is recorded. As it reaches the final checkpoint, the timer will be stop and the final recorded RACETIME value is saved.

1.1.2. Rounds

Every team will have 3 rounds.

4 teams with the highest total SCORING will compete in the Finale.

The checkpoints position for round 1 and 2 are as shown in item 5.

The checkpoints position for round 3 will be given at the end of day 1 of the competition.

The checkpoints position for Finale will be reveal on day 2 of the competition.

One round should not last more than 3 minutes RUNTIME.

After the RUNTIME is over and the robot hasn't pass through all checkpoints, the BUZZER will sound and the team will be asked to remove the robot from the COMPETITION FIELD.

3. The Robots

3.1. Dimensions

The following size limitations apply for each robot

Width – 150mm max

Length – 150mm max

Height – no limit

3.2. Control

3.2.1. The robot must be controlled autonomously with no human aid.

3.2.2. The controller unit should be embedded in the robot and cannot be placed outside the robot.

3.3. Power Source

3.3.1. The robot must be powered by a power source such as a battery fixed on the robot.

3.3.2. The robot cannot be powered by a stationary power source connected to the robot by a cord.

3.4. Construction

Any robot kit or building material may be used, as long as the robot fits the above specifications.

4. Game Play

4.1. Game Zone

An area around the field will be designated as the GAME ZONE. No one is allowed inside the game zone except for the robot handlers and the referees.

4.2. Start and Restarts

4.2.1. One team member is elected as the robot handler. Only the robot handler is permitted to handle the robot during the game. All other team members must remain outside the game zone.

4.2.2. The robot will be placed at the START line and checked by one of the referees.

4.2.3. A robot may restart the run IF the handlers deem necessary within the RUNTIME.

The restart can be requested only if the robot doesn't follow the line, has stopped on halfway or has lost the directions.

4.2.4. At any restart, the robot must be positioned back at the start line.

4.2.5. It is allowed to reprogram and adjust the sensor position on the robot during the allocated RUNTIME.

4.2.6. The RACETIME will reset to zero on every restart and all checkpoint marks will also be zeroed. The RUNTIME will keep running during all restarts.

4.2.7. There is no limit for the number of restarts within the RUNTIME of 3 minutes.

4.2.8. A robot must restart if:

- The robot handler ask for a restart.
- The robot is touched by a human.
- The robot moves off the field.

4.3. Following the line

4.3.1. The robot must always be on the line during the RACETIME or otherwise the referee will use the CONVEX HULL method to determine either it will be counted or not. This method is done by stretching an imaginary rubber band around the extremities of the robot and using the enclosed space as a silhouette.

4.3.2. A team's robot must remain at the field until it has completed its game.

6.6 The calculation for the total SCORING for the 3 rounds is as follows:

- 20% from the total points from Round 1
- 20% from the total points from Round 2
- 60% from the total points from Round 3

6.7 Four (4) teams with the highest total SCORING will enter the Finale.

6.8 If there are 2 teams or more with the same accumulated POINTS, the team with the fastest RACETIME during Round 3 will be at a higher standing, followed by averaging the RACETIME of Round 1 and 2.

6.8 During the Finale, the team with the highest points will win. If there is a tie, the team with the fastest RACETIME will be at a higher standing.

7. Code of Conduct

7.1. Fair Play

7.1.1. Robots that cause deliberate interference with other robots or damage to the field will be disqualified.

7.1.2. Participants that cause deliberate interference with robots or damage to the field will be disqualified.

7.1.3. It is expected that the aim of all teams is to play a fair and clean game.

7.2. Behavior

7.2.1. Participants who misbehave may be asked to leave the competition area and risk being disqualified from the contest.

7.2.2. The rules will be enforced at the discretion of the referees, officials, and local law enforcement authorities.

8. Juries

8.1. All decisions about scoring, gameplay and timing are made by the juries. Teams should completely respect their vote and decisions.