

2. Mobile Robot

Purpose of the event

- Engineers have to come up with optimized solution to given constraints and parameters.
- Given sequence of factory shop floor where components with technical defects are placed among the normal component. Mobile robot has to sense and pick the component and place it in the rejected lot.
- Analyze the situation and build a robot with required constraints and parameters to accomplish the given task.

Eligibility Criteria Participant

- Must have SAEINDIA membership
- Must have basic knowledge on robotics
- Must have basic knowledge on programming

Expected skills

- Basic microcontroller programming
- Selection procedure of drives and sensors
- Problem analysis and quick resolution capability

Competition Rules

- The team has to test the robot in the given layout.
- The final bot will be judged comparing with respect to the initial design document
- Endurance and durability of the robot will be taken into concern.

Team Size

- Team size: 3 (For Mechanical) and Task to be done is Formulation and Logic.
- Team size: 3 (For EEE/ECE/EI/CS/IT) and Task to be done is Programming.
- Number of teams for Tier-I: as many as possible
- One team from each college moves to Tier-II
- Two teams from each zone moves to Tier-III

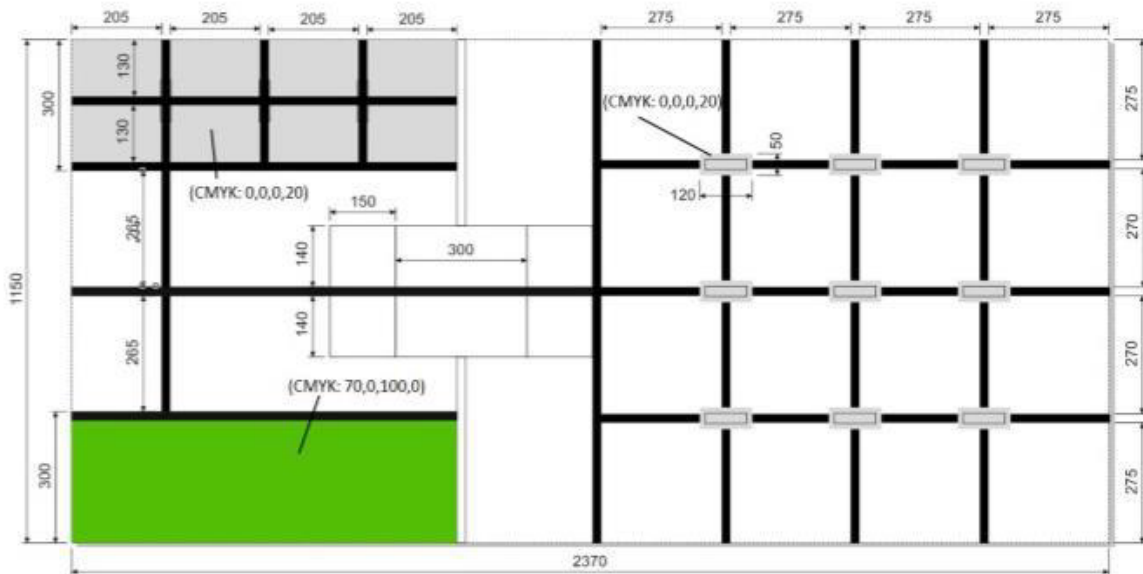
Judging criteria and Marking Scheme

Sr.No.	Criteria	Marks
1	Documentation	10
2	Robot Specification	10
3	Construction	10
4	Rules Compilation	10
5	Time	15
6	Task optimization	15
7	Effectiveness of the robot	Max of 100

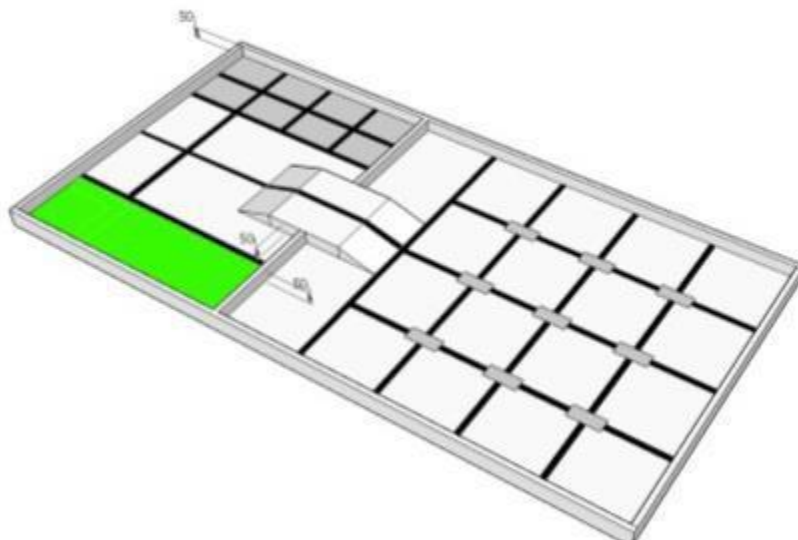
8	Logic	20
9	Simplicity of bot	20

- Score will be calculated at the end of the challenge or when time stops.
- Detection of good components without disturbing would help to gain 10 points.
- Detection of bad components would gain 20 points.
- Picking up the component would gain 25 points without disturbing.
- Each disturbance would cost a penalty of 25 points.
- Successful completion of the mission would lead to gaining of 100 points.

Drive and Sensor Selection



Factory Layout



Details of the Mat

- Horizontal Dimensions: 2370 mm × 1150 mm.
- A wall that is 16 mm in width surrounds the table. The height of the wall is 50 mm
- The height of the barrier between the Storage Station area and the field area is 50mm
- The table base colour is white, except for the black line, Challenge Object Areas, Warehouse, and the Base area.
- There are 9 rectangles in the Outer Space area that are 120 mm x 50 mm.
- Three intersections of the black lines in the Warehouse are the places where the good components are set at the beginning of every attempt.

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