

 Theme & Rules

“Reach for the top of Mt. Fuji”

The aim of this contest is to compete for points by placing beach balls into seventeen "Tubes" which they have "reach the summit", that is, when five consecutive "Tubes" are occupied in a diagonal line, which must also include the highest center "Summit" Tube(which represents the top of Mt. Fuji). The duration of each match is three minutes. The overall tournament involved preliminary and final rounds.

- ① [THE GAME FIELD](#)
- ② [COST OF PRODUCTION AND CARRIAGE](#)
- ③ [TEAM MEMBERS](#)
- ④ [MACHINE](#)
- ⑤ ["BEACH BALLS"](#)
- ⑥ [MATCHES](#)
- ⑦ [VIOLATION AND DEDUCTION OF POINTS](#)
- ⑧ [DISQUALIFICATION](#)
- ⑨ [SAFETY](#)
- ⑩ [OTHERS](#)
- ⑪ [AWARDS](#)
- ⑫ [NOTICE ON MACHINE CONSTRUCTION](#)
- ⑬ [QUESTIONS REGARDING THEME AND RULES](#)
- ⑭ [FAQ\(Frequently Asked Question\)](#)

① THE GAME FIELD

 TOP

(1) The floor of the game field shall be made of 2 mm thick vinyl sheeting (LINOLEUM PVC flooring sheet of Lonseal Corporation). The surface of the vinyl sheets shall be joined by vinyl-tape (non-shiny, 50mm in width).

(2) Game field consists of "Running Zone", "Fuji Zone", and "Start Zone A", " Start Zone B", "Beach Ball Stocking Place" for each team. (Refer to the attached plans for details)

(3) "Running Zone"

(a) "Running Zone" is surrounded by a 100mm wooden fence.

(4) "Start Zone A "

(a) Area: 1200mm x 1200mm

(b) Both Automatic Machines and Manual Machines are able to start the game from "Start Zone A".

(5) "Start Zone B"

(a) Area: 1200mm x 1200mm

(b) Only Automatic Machine/s are able to start from "Start Zone B".

(6) "Fuji Zone"

- (a) "Fuji Zone" is surrounded by a 30mm wooden fence.
- (b) At the "Fuji Zone", 17 cylindrically shaped tubes are fixed to the floor.
- (c) The "Summit" tube, which is 1000 mm in height and 450 mm in diameter, is located in the center of the "Fuji Zone".
- (d) Eight "Mountainside" tubes surround the "Summit" tube and they are 600 mm in height and 450mm in diameter. Eight "Foothill" tubes surround the "Mountainside" tubes and they are 300mm in height and 450 mm in diameter.
- (e) All tubes are made of acrylic.
- (f) White guidelines, 30 mm wide are marked on the "Fuji Zone".
- (g) "No Entry/No Touching Zone for Manual Machine" which is colored in dark green is located in the "Fuji Zone".
- (h) Refer to the attached plans for details of tubes and guidelines.

(7) "Beach Ball Stocking Place"

- (a) 16 beach balls for each team are located in the designated area.
- (b) Refer to the attached plans for the shape and the form of the "Beach Ball Stocking Place".
- (c) All beach balls are located in a frame fixed onto the floor and arranged in rows of 4 x 4.
- (c) The frame is made of acrylic. (Refer to the attached plans for details)

② COST OF PRODUCTION AND CARRIAGE

[▲ TOP](#)

(1) Cost of production

(a) The committee shall provide US\$1000 as a subsidy of machine construction fee to each committee member organization.

(2) Cost of carriage

(a) The transport company, which the committee specified, will ship the machine. Details will be announced later.

(b) The machine/s must be packed so that it/they fit inside one crate measuring 1500mm x 1500mm x 1500mm.

③ TEAM MEMBERS

[▲ TOP](#)

(1) Each team shall comprise 4 members; 3 university/polytechnic students and 1 instructor.

(2) However only the 3 students are permitted to enter the game field. (During the match, only the operator of the manual machine (1 person per team) is permitted to enter the game field.)

④ MACHINE

[▲ TOP](#)

(The definition of “Manual Machine” and “Automatic Machine “has changed from the previous rule book.)

Each team can construct either or both Manual Machine/s and Automatic Machine/s to compete in the contest. There is no restriction in number of machines. The machines can mount beach balls at the start of the game, and the numbers of the mounted beach balls are not restricted.

(1) Manual Machine/s

(a) The Manual Machine/s must not touch the “Fuji Zone”. Also, the Manual Machine/s cannot touch/enter or extend its parts over to the “No Entry/No Touching Zone for Manual Machine” in the “Fuji Zone”. However, the Manual Machine/s are allowed to touch 8 “Foothill” Tubes.

(b) The operator can operate the Manual Machine/s either via cable using a control box connected to the Manual Machine/s or by remote control using infrared rays, visible rays, and sound waves.

The operator must not ride on the Manual Machine/s.

(c) When operating via cable, the cable, which connects the Manual Machine/s and the control box, must have a height of 1000mm from the ground or higher at the connecting point to the machine. Also, the length of the cable from the Manual Machine/s to the control box must not exceed 3000mm.

(2) Automatic Machine

(a) It has to be an automatic controlled machine, and once the game starts, the operator must not handle the machine/s.

(b) Automatic Machines are allowed to touch and enter all area of the game field.

(3) Method of Control

(a) For each team, only one person is permitted to control the machine/s.

(b) Manual Machine/s, and Automatic Machine/s are permitted to handle all beach balls on the game field including opponent's Beach Balls.

(c) For Automatic Machines, "retry" is allowed. After a "retry" is called out by a team, they are allowed to reset and restart the Automatic Machine/s from the start zone. Reset and restart can be done by anyone of three members of the team. Retry is permitted only once per game for each team.

(d) The team members are not permitted to handle or touch the machine/s once the game starts.

(4) Power Supply

(a) Each team shall prepare its own power source for all its machine/s during the games.

(b) Voltage of the machine's electric power source to be used must be below DC24 V.

(c) Power sources that are considered dangerous or unsuitable by the Committee shall not be permitted. (e.g. use of fire)

(5) Weight

(a) Total combined weight of all machines shall be less than 40 kg.

(b) The combined weight includes the weight of power sources, a control box, cables and other machine parts and accessories. However, weights of beach balls are not included.

(c) Machines shall be weighed twice as follows:

1. Prior to the test run on the day before the tournament

2. Prior to the contest on the actual day of the tournament

(6) Size

(a) At the start, the Manual Machine/s and Automatic Machine/s must not exceed 1200mm length, 1200mm width, and 3000mm height excluding the cable.

(b) If a number of machines are starting from the same Start Zone, all machines placed together must fit in the size of 1200mm length, 1200mm width, and 3000mm height.

(c) The machines can be separated and sizes can be changed freely after the game starts. All separated machine/s must have the ability to move. Machine/s separated from Automatic Machine/s must have the mechanism of an Automatic Machine. Also, all machine/s separated from Manual Machine/s are considered as Manual Machine.

⑤ "BEACH BALLS"

[TOP](#)

(a) Beach balls to be used are made of soft vinyl material with a diameter of 300mm when inflated.

(b) Sample beach balls will be made available by the Committee to each country and region.

(c) Beach balls to be used in a game will be fully inflated.

⑥ MATCHES

[▲ TOP](#)

(1) The Tournament

(a) The contest is played on the knockout system, and each team will participate in at least two games.

(2) The Duration of Matches

(a) Matches shall last for 3 minutes. However, matches may be ended earlier if the referees decide that the game cannot continue due to mechanical problems. Alternatively, the match may end before the 3 minutes if "REACH" takes place.

(b) Setting shall be completed within 1 minute after receiving the signal for the setting.

(c) Match Start

Manual Machine/s and Automatic Machine/s can start at the instant when the signal for the game starts. Each Automatic Machine shall be so constructed that it can be started in one operation.

(3) Points Awarded

(a) Points are calculated when the match ends.

(b) If a machine places its own team's beach ball into the tube, and that beach ball is not touching the machine, the team occupies the tube and gains a point.

(c) If both team's beach balls are placed in the same tube, the owner of the beach ball occupying higher position in that tube is considered to have won the tube and gains a point.

(d) Points for each tube are as follows:

"Summit" Tube-4 points

"Mountainside" Tubes-2 points each

"Foothill" Tubes -1 point each

(e) At the moment when 5 consecutive "Tubes" are occupied in a diagonal line including the "Summit" Tube, it is considered to have achieved "REACH" and is assumed as the winner even though the opponent may have scored more points.

Only in the final tournament, "REACH" will not be completed unless the "Summit" Tube is filled with 3 or more beach balls and also "Mountainside" Tubes are filled with 2 or more beach balls.

(4) Deciding the Winner

(a) The game shall be decided by adding up the points scored by each team after subtracting points for violation.

(b) In the case of a draw, the winner of the match will be decided based on the conditions in the following order:

1.The team that occupies the most "Tubes" wins the match.

2.Judges' decision.

(c) If "REACH" takes place, the team that achieves "REACH" wins the match.

⑦ VIOLATION AND DEDUCTION OF POINTS

[▲ TOP](#)

The following behavior will be regarded as violations and 1 point will be deducted for each behavior. If 3 points are deducted the team will be disqualified.

(1) Manual Machines touching the "Fuji Zone", or touching/entering, extending its parts over "No Entry/No Touching Zone for Manual Machine".

(2) Manipulating beach balls by anything other than the machine (including cables) after the game starts.

(3) Operator touching machines, beach balls after the game start.

(4) Manual Machine/s touching any Automatic Machine/s.

*Points earned by above violation are invalid.

⑧ DISQUALIFICATION

[▲ TOP](#)

The following behavior shall be considered as meriting disqualification by the referee, and the team will be disqualified.

- (1) Manual Machine attempting to cause damage to the opponent's machines.
- (2) Attempting to damage the game field, its equipment, or beach balls.
- (3) Any act leading to failure to comply with the spirit of Fair Play.

⑨ SAFETY

[▲ TOP](#)

- (1) All machines must be built so that they will not cause harm to the operators, audiences, or the referees.
- (2) Operators must operate the machine with safety.

⑩ OTHERS

[▲ TOP](#)

- (1) For any other behaviors that are not specified in the rules, referees are given the authority to make the final decision.
- (2) The referees' decision is final in the event of a dispute.
- (3) Any amendments to the rules will be announced by the Committee immediately.
- (4) All teams are encouraged to decorate their machine/s with their country's/region's national characteristics.

⑪ AWARDS

[▲ TOP](#)

Besides awards for the top three winners, there will be prizes for Best Techniques, Best Idea and Best Artistic Design.

⑫ NOTICE ON MACHINE CONSTRUCTION

[▲ TOP](#)

Followings are the points to be kept in mind when constructing machines, but other than these, a sufficient attention must be paid to avoid danger.

- (1) Automatic Machine/s may come in contact with one another. Therefore, sufficient attention must be paid on the possibility of contact when constructing Automatic Machine/s.
- (2) To ensure safety, when using a laser beam, it must be used in a way that it will not harm any operators, audiences, or the referees.
- (3) Consider the materials of "Tubes", "Beach Ball Stocking Place", and a sufficient attention must be paid to avoid machine/s damaging the game field.

⑬ QUESTIONS REGARDING THEME AND RULES

[▲ TOP](#)

Questions regarding theme and rules should be addressed by FAX or e-mail to the Committee in English.

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Supplementary information (FAQ) on rules will be provided on ROBOCON OFFICIAL HOMEPAGE.

FAQ on 'ABU Robocon Tokyo 2002'
<http://www.nep21.co.jp/robocon/index.html>

(Korean Version)