MakeX Robotics Competition
Blue Planet

2018 Competition Manual V1.2

January 2018
Prepared by the MakeX Robotics Competition Committee

Update records:

Date	Version	Modified points
February 1, 2018	1.2	First published version of the Blue Planet manual.
		Adjust the task arena of "garbage sorting"
		Adjust the task and arena of "disposal of construction waste"
		Add *Blue Planet Pre-competition Inspection List* in the appendix
		Add the restrictions on "including the site debug area" in R4
		Add the explanation about the relationship between the modification time and competition time in E21
		2.2 Add the description of the start-up area
		Add "the robot will not be punished if it deviates from patrol lines" in R3
		E14 is changed into "contestants can always restart and modify the robot during the competition"
		Add R7 rule
		2.8.1 Distinguish the primary school group from the junior high school group in terms of garbage sorting
		2.8.3 The original 360 °is changed into 270 °
		2.8.6 Change the status of scoring

Contents

1. Competition introduction

1.1 About MakeX

MakeX is a robot event platform that guides the growth of teenagers aimed at stimulating enthusiasm for creation, sharing and cooperation through such activities as Robotics Competition, Maker Marathon and STEAM Carnival. Its core activity, MakeX Robotics Competition originated in China, is an international robot competition with STEAM education as the core, committed to promoting science, technology and education innovation through high-level competition and encourage teenagers to learn science, technology, engineering, art, mathematics and other multidisciplinary knowledge and apply them to practical problems. In addition, MakeX advocates teenagers creating works in cooperation and improving themselves in competition.

1.2 About MakeX Robotics Competition

MakeX is committed to providing teenagers with a platform for self-discovery, self-improvement and self-achievement and contributing to better education.

MakeX encourages teenagers to cooperate in sharing, create in cooperation and grow in competition to realize their own values.

MakeX hopes to become the global leading international robot competition brand centered on STEAM education.

1.3 About MakeX spirit

Core spirit of MakeX: Creation, Share, Cooperation

Core spirit of MakeX Starter : Helpfulness, Friendship, Communication, Happiness.

Encourage teenagers to help each other to learn and actively communicate and exchange. Regardless of alliances or opponents, they shall learn from each other and improve while obtaining friendship and enjoying happiness.

1.4 2018 Season

MakeX Robotics Competition, hosted by MakeX Robotics Competition

Committee. In 2018, MakeX Robotics Competition Committee will organize competitions around the world and advance teams to participate in the 2018 MakeX Championship on December.

1.5 Entry requirements

MakeX Robotics Competition aims to provide teenagers with a high-quality, highly influential and high-end robot event platform. Teenagers who meet the age standards can sign up via the designated website. The number of contestants in each team is 1 to 2 with 1 to 2mentors.

1.6 Competition schedule

2018 MakeX Robotics Competition will be carried out across the world and is mainly divided into point race, regional competition, overseas competition and MakeX Championship. Competing teams can be qualified to MakeX Championship by participating in the point race, overseas competition and regional competition.

2. Task introduction

2.1 Theme

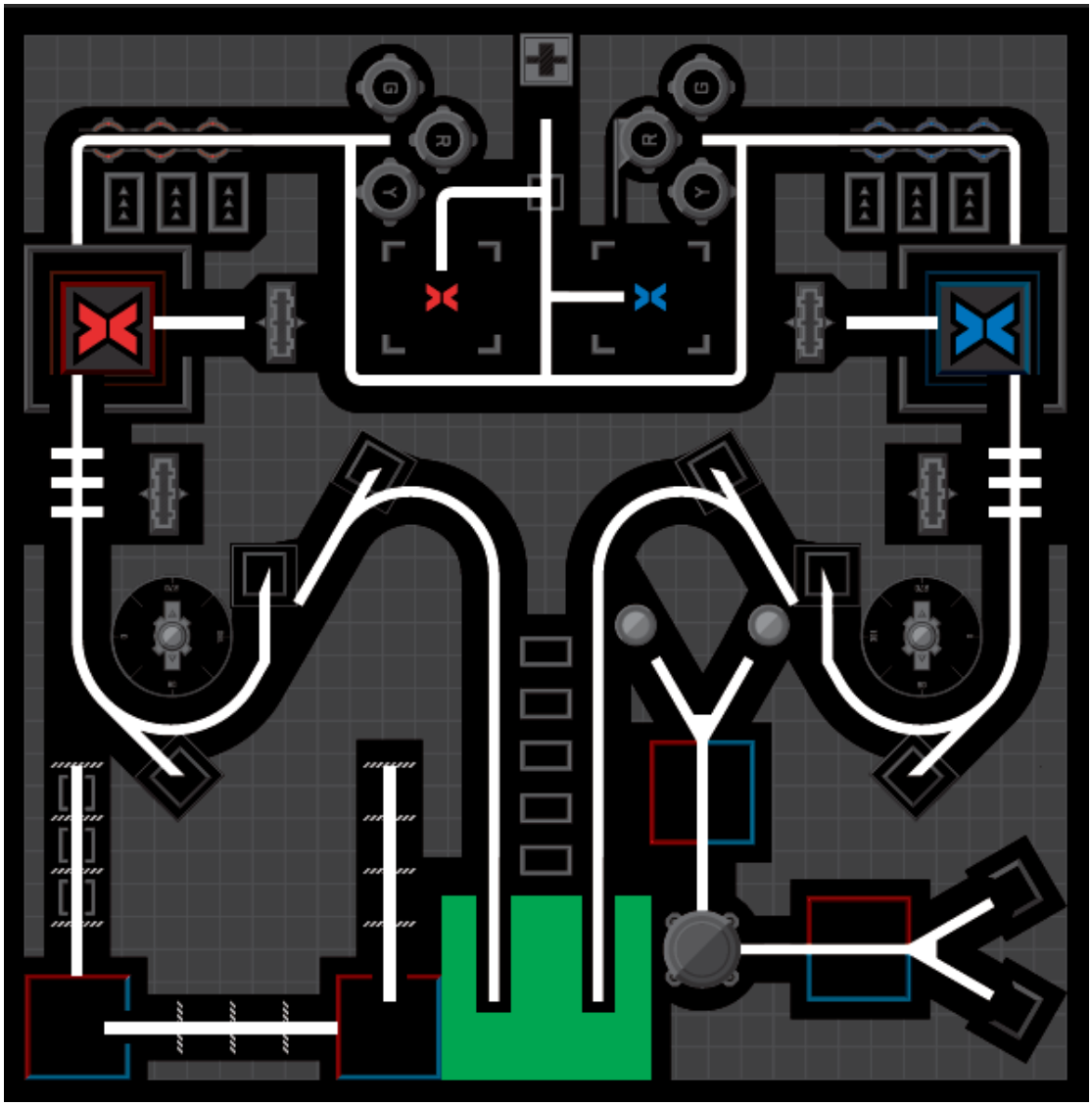
Looking back on the Earth from the space, our home is being covered by more and more deserts and polluted seawater - we are getting much farther away from the blue planet. And you are responsible for designing robots to improve the pollution discharged by the mankind through the following ways, so that the Earth will be the "Blue Planet": garbage sorting and remove floating pollutants in water; dismantle old chimneys and thermal power stations; monitor the quality of air and groundwater, so that the mankind can pay attention to the surrounding environment.

You are responsible for restoring the planet back to a blue one! MakeX contestants!

2.2 Arena

The size of the arena is 2m*2m, and the arena is made of PU cloth or spray-painted cloth. The white guide line is 2cm wide, and the end of the white guide

line is marked with the location to place the task model. The blue and red squares on the arena are robot start-up areas. Many tasks can be fulfilled on the arena, and tasks include 7 independent tasks and 4 alliance tasks. The Red and Blue Teams have two start-up areas respectively for their own use, and there are 4 public start-up areas for the alliance task.



2.3 Group

Primary school group: each competition performs 4 independent tasks and 2 alliance tasks according to the difficulty level.

Junior high school group: each competition performs 5 independent tasks and 2 alliance tasks according to the difficulty level.

2.4 Scoring description

E1. **Task score:** during the competition, the referee will give the corresponding scores based on the completion of the task. When a task is completed, the referee will give the corresponding scoress. When a task is completed, the follow-up operation will not affect the score of the task that has been finished. After the independent task is completed, the competing team can get the score for the independent task. After the alliance task is completed, two competing teams in the alliance can get the score for the alliance task. As for details of the tasks, please refer to the introduction of the tasks.

E2. **Completion time:** the competition lasts for five minutes. When the contestant give a hint to referee to end the competition or the competition ends, timing of the competition stops, and the time in that moment is the completion time of the competition, which can bring certain advantages for ranking.

E3. **Single-session score of Qualification Match = score of the independent task of the party + score of alliance task - deducted score of the party due to violation.**

E4. **Single-session score of Championship Match = score of the independent task of the Red team + score of the independent task of the Blue team + score of alliance task – deducted scores of both parties due to violations.**

E5. **Ranking of Qualification Match:** sort by the sum of single-session scores of four Qualification Matches, and teams with the highest total scores in the Qualification Matches are at the top of the list. If the total scores are the same in Qualification Matches, teams with the highest total independent task scores of four Qualification Matches are at the top of the list. If the sum of independent task scores is still the same, teams spending the shortest time in finishing four Qualification Matches are at the top of the list.

E6. **Ranking of Championship Match:** take the highest single-session score in three Championship Matches as the final score of Championship Match. Alliances with the highest single-session score are at the top of the list. If the of final score is the same, alliances with the highest alliance task score of final score are at the top of the list. If the alliance task score is the same, teams spending the shortest time in finishing the final score of Championship Match are at the top of the list.

2.5 Robot description

E7. The robot can only use mBot motors or TT Geared Motor DC 6V/312RPM which shall be manufactured or sold by Shenzhen Makeblock Co., Ltd.

E8. In addition to 3D printing parts, its parts shall be manufactured or sold by Shenzhen Makeblock Co., Ltd.

E9. Specified 9g Micro Servo (Quantity: 1)

E10. Specified mCore (Quantity: 1)

E11. The initial size of the robot is: 25cm (length) * 25cm (width) * 25cm (height).

E12. The maximum size of the robot is limited to: 30cm (length) * 30cm (width) * 30cm (height).

E13. The maximum weight of the robot is limited to: 5kg.

2.6 Robot restart description

E14. Contestants can always restart and modify the robot during the competition.

E15. If the contestant chooses to restart the robot, the contestant needs to give a hint to the referee for the restart, and after approved by the referee, the contestant can take the robot out.

E16. After the robot is removed from the arena, it can be modified or reset, and the restarted robot shall be placed back to any one of the start-up areas (for example, the Red team can only put the robot back to the start-up area of red square or the public start-up area for both the Red and Blue teams).

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E17. If the restart is chosen when the robot contacts the prop, this score prop is deemed to be invalid.

E18. The restart of robot will not stop the competition, and timing of the competition is continued.

2.7 Robot modification description

E19. During the competition, after giving a hint to the referee, the contestant can take the robot out for modification, which shall be completed in the stipulated modification area. The modification shall be completed within five minutes, and timing of the competition will not stop in terms of the modification.

E20. The robot shall not be connected to the computer during

modification, otherwise the referee has the right to disqualify the team from the competition.

E21. Contestants can switch the program through the keys on the mCore.

2.8 Operation rules

R1. **Fail to arrive on time:** competing teams shall show up on time and the referee has the right to disqualify the team that does not arrive on time from the competition.

R2. **Start the robot in advance:** the contestants shall start the robot only after the referee announces the start of the competition. If the robot is started in advance, the contestants shall be warned for the first time and the competition restarts. If the robot is started in advance again, the referee shall have the right to disqualify the team from the competition.

R3. **Violation due to the contact with the arena props:** contestants are strictly prohibited to contact the arena props during the competition. Each contact with the arena props is considered to be the violation, and 20 scores will be deducted in the competition. If advantages are brought to the competition due to the contact with arena prop, the score prop is deemed to be invalid. The robot deviating from patrol lines will not be punished.

R4. **Guidance that violates the rules:** during the competition, parents or mentors of competing teams on the arena debug area are not allowed to provide any guidance to participating teams in any way. If guidance that violates the rules occurs, the referee shall have the right to disqualify the team from the competition.

R5. **Unsafe robot:** safety factors shall be fully considered when robots are designed and made, and robots shall not destroy arena props or cause damage to people. If the referee determines that the robot is not safe, the contestant needs to modify the robot, and before that, the robot cannot compete in the competition.

R6. **Excessive behavior:** when contestants and their related personnel behave impolitely and seriously to affect the arena and safety of the audience, resulting in the stop of the competition, it will be considered as excessive behavior. Excessive behaviors include but not limited to: behaviors which seriously violate the competition spirit and repeated or overt foul; uncivilized behaviors towards the contestants, coaches, staffs of competition or participants; repeated or overt acts which violate safety rules, etc., excessive behaviors may result in the fact that the team violating rules is disqualified from the competition on the site or the competition.

R7. Competing teams are not allowed to bring laptops and other tools that can be used for programming into the site, and if rules are violated,

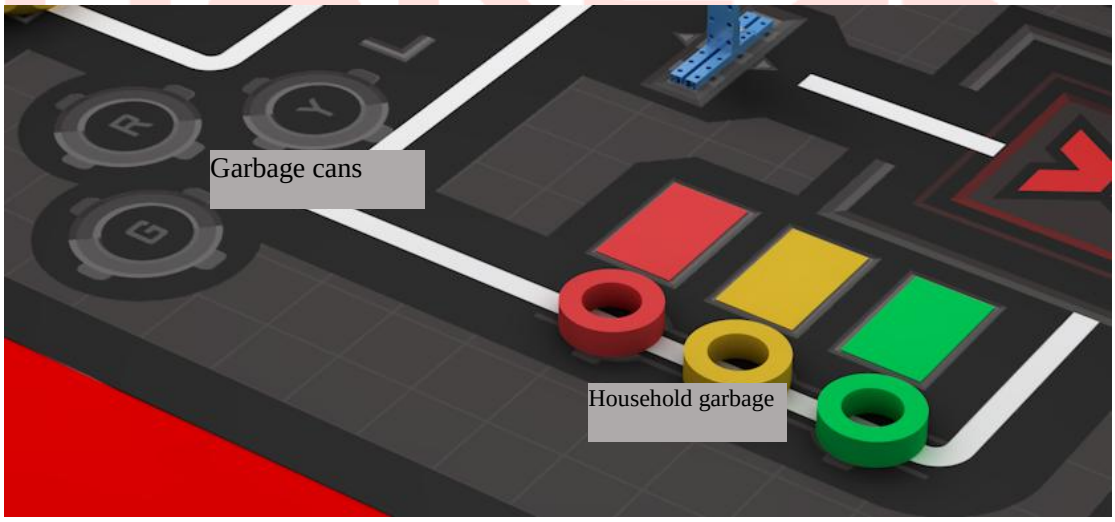
they will be disqualified from the competition on the site.

R8. Robots should be able to adapt to some situations such as field wrinkles, lights etc. Contestants should consider these situations and adjust robots before the game.

2.9 Independent tasks

2.9.1 Garbage sorting:

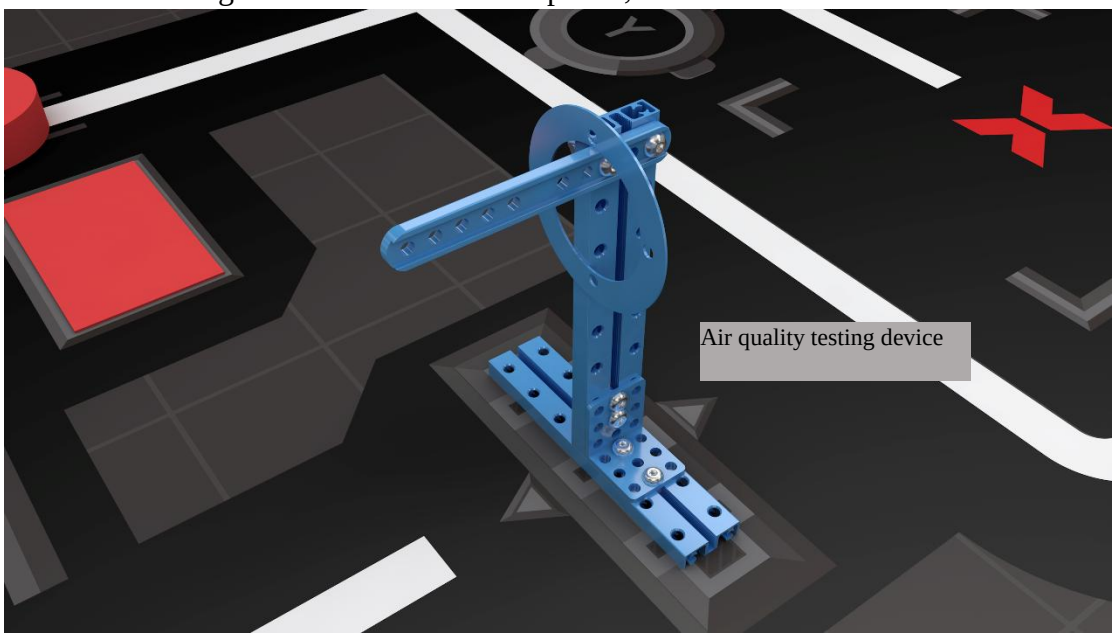
1) There are three types of red, blue and yellow household garbage and three garbage cans on the arena placed randomly. There are the corresponding color cards next to household garbage. As shown in Figure below.
2) The robot places the three kinds of household garbage in the corresponding round garbage can area (red - R, green - G and yellow - Y). If the robot completes the classification correctly, the junior high school group gets 30 scores for each of household garbage.
3) For primary school group, an arbitrary color of household garbage will be placed closest to the garbage cans. If the robot completes the classification correctly, this task is deemed to be completed, and the primary school group gets 90 scores.
4) If the stationary status of the vertical projection of household garbage enters the garbage can area, scores can be obtained.



2.9.2 Obtain air quality data

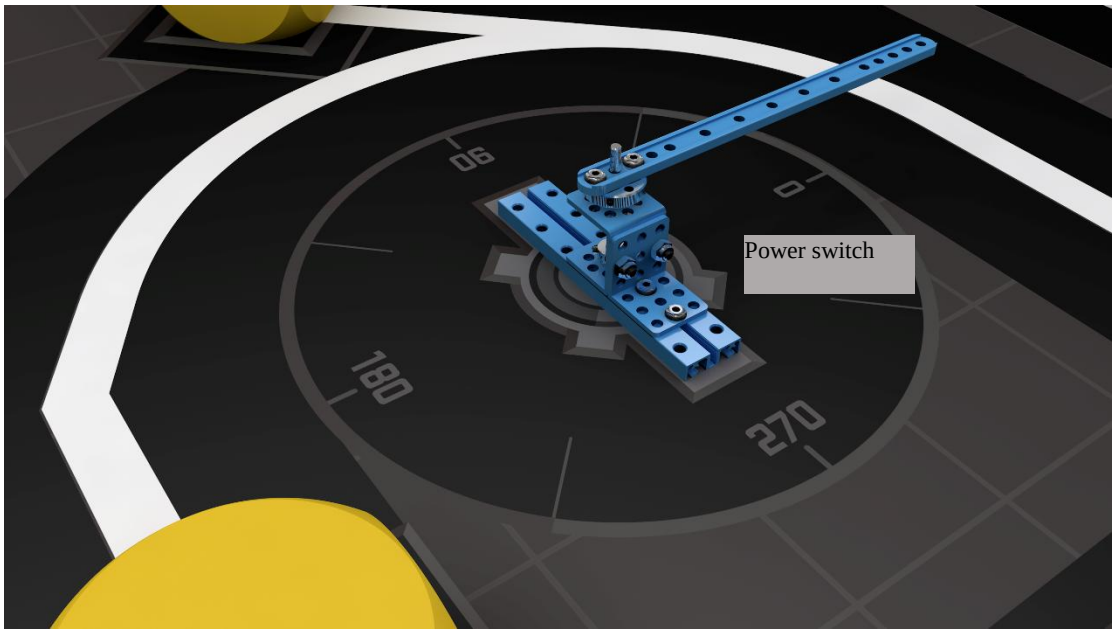
1) There is an air quality testing device hanging on the base on the arena as shown in the figure below.
2) If the robot in the primary school group removes the air quality testing device from the base, the primary school group can obtain samples and data, 30 scores can be obtained.
3) If the robot in the junior high school group removes the air quality testing

device from the base and delivers the device to the start-up area, the junior high school group can obtain samples and data. If the vertical projection of the air testing device enters the start-up area, 30 scores can be obtained.



2.9.3 Turn off the power switch

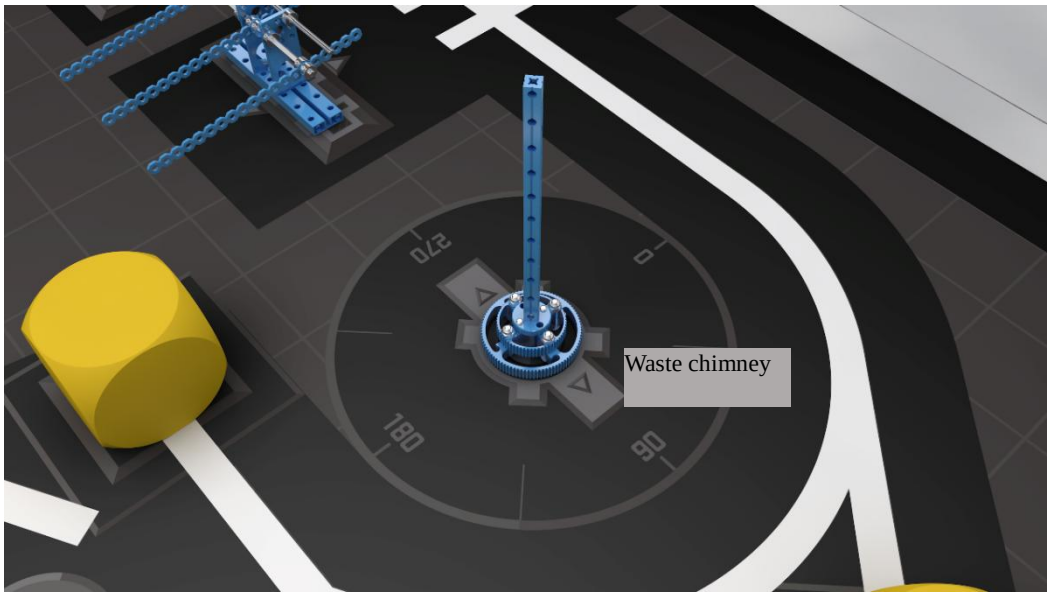
1) There is a power switch with seat on the arena that can freely rotate as shown in the figure below.
2) If the robot rotates the horizontal switch more than 270 °and turns off the power switch, the task is deemed to be completed and 20 scores can be obtained.



2.9.4 Dismantle chimney

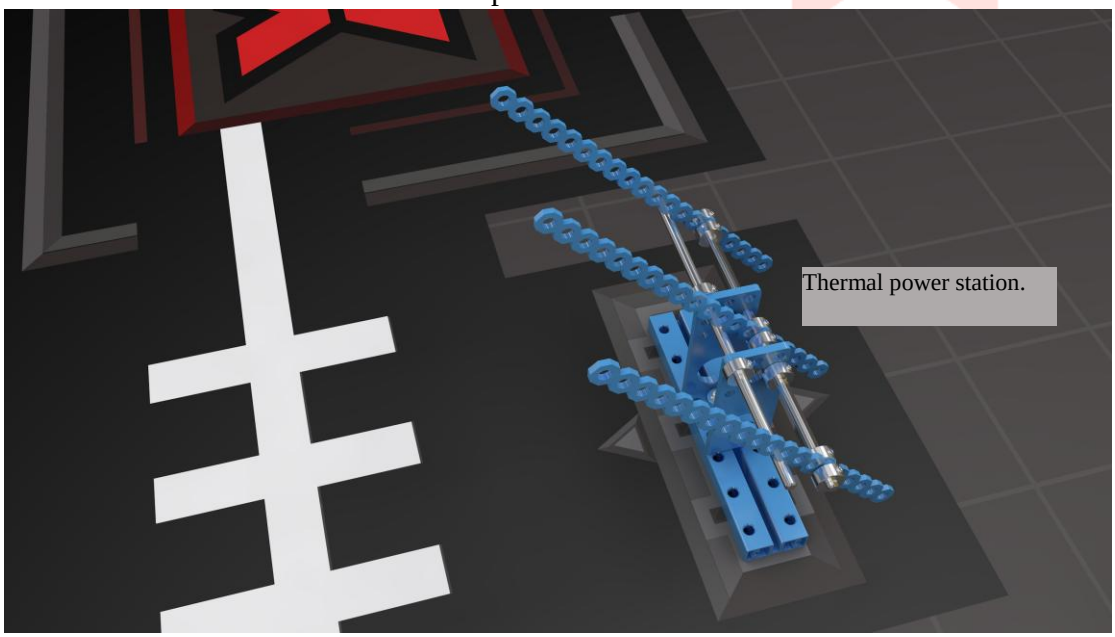
1) There is an erected chimney on the arena as shown in the figure below.

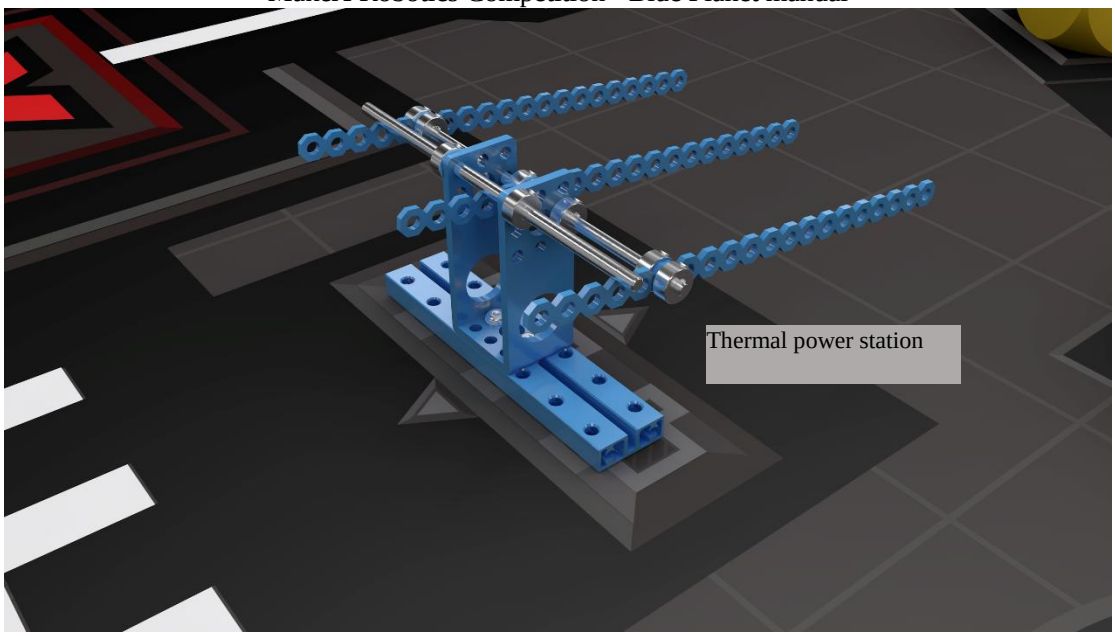
2) If the robot makes the chimney on the arena at the falling status, 20 scores can be obtained.



2.9.5 Dismantle thermal power station

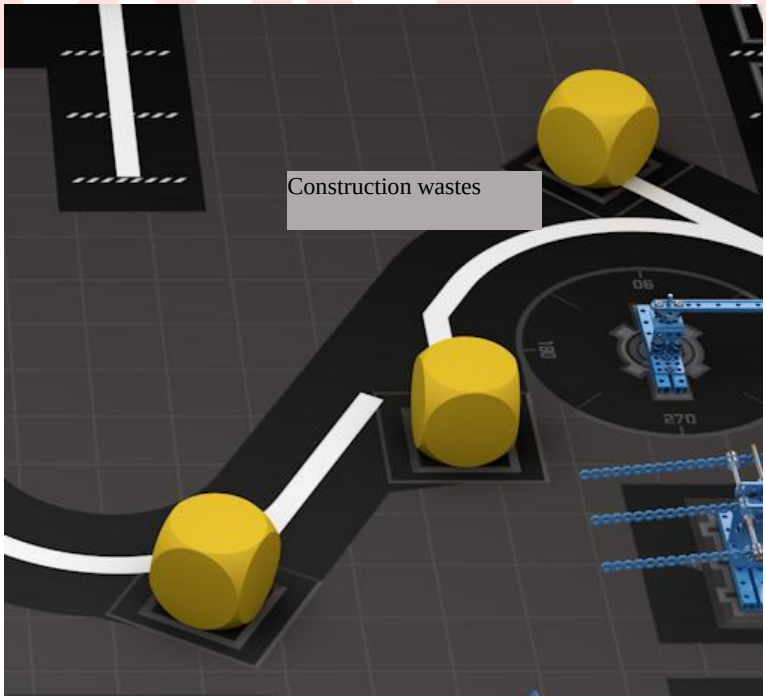
1) There is a waste thermal power station with three workshops on the arena as shown in the figure below.
2) If the robot pushes the three workshops tilted to the other direction, the task is considered to be completed as shown in the figure below, and 20 scores can be obtained for each workshop.





2.9.6 Dispose construction waste

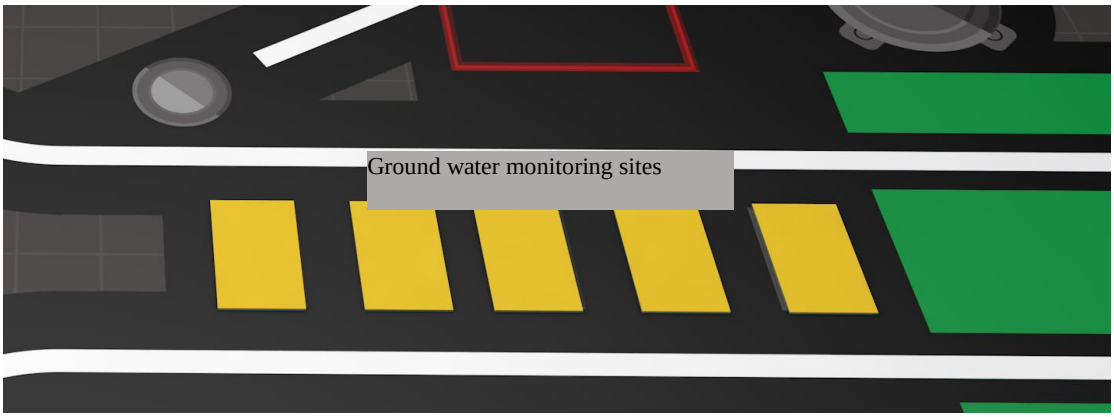
1) There are three places with large-scale construction waste on the arena as shown in the figure below.
2) If the robot pushes large-scale construction waste out of the square area and the stationary projection of waste is not in contact with the square area, 20 scores can be obtained for each place.



2.9.7 Monitor groundwater data

1) There are five groundwater monitoring sites on the arena as shown in the figure below.
2) If the robot can detect five groundwater monitoring sites and display the

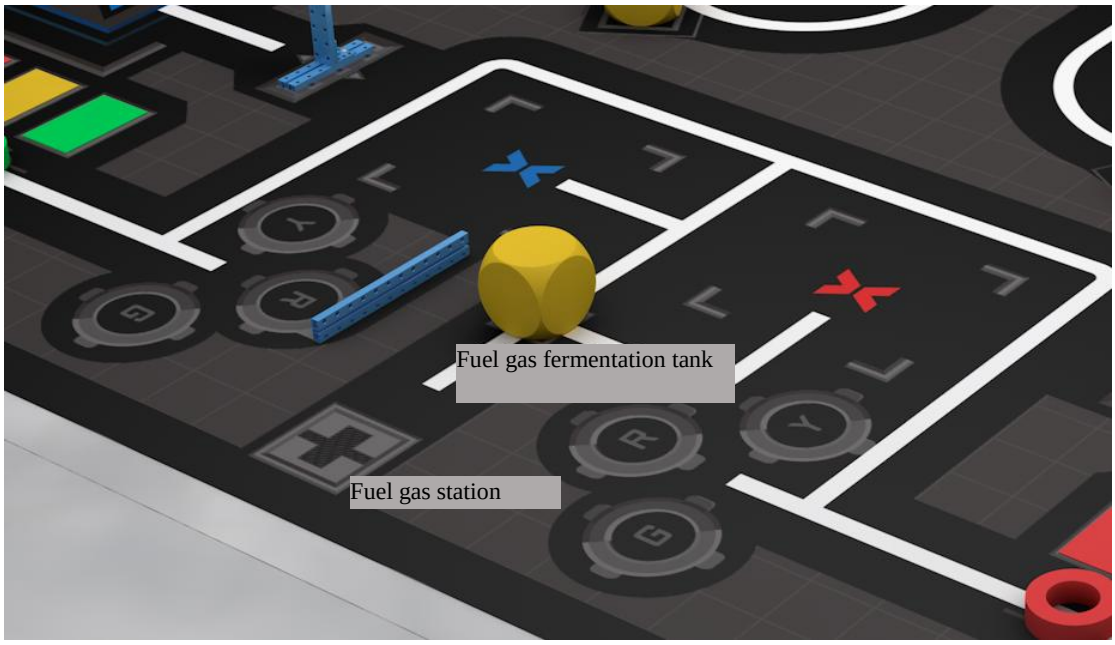
number of colored abnormal monitoring sites on the LED or digital tube, the color of abnormal monitoring sites is yellow and the number of abnormal monitoring sites is random, and if displayed correctly, 20 scores are obtained.



2.10 Alliance task

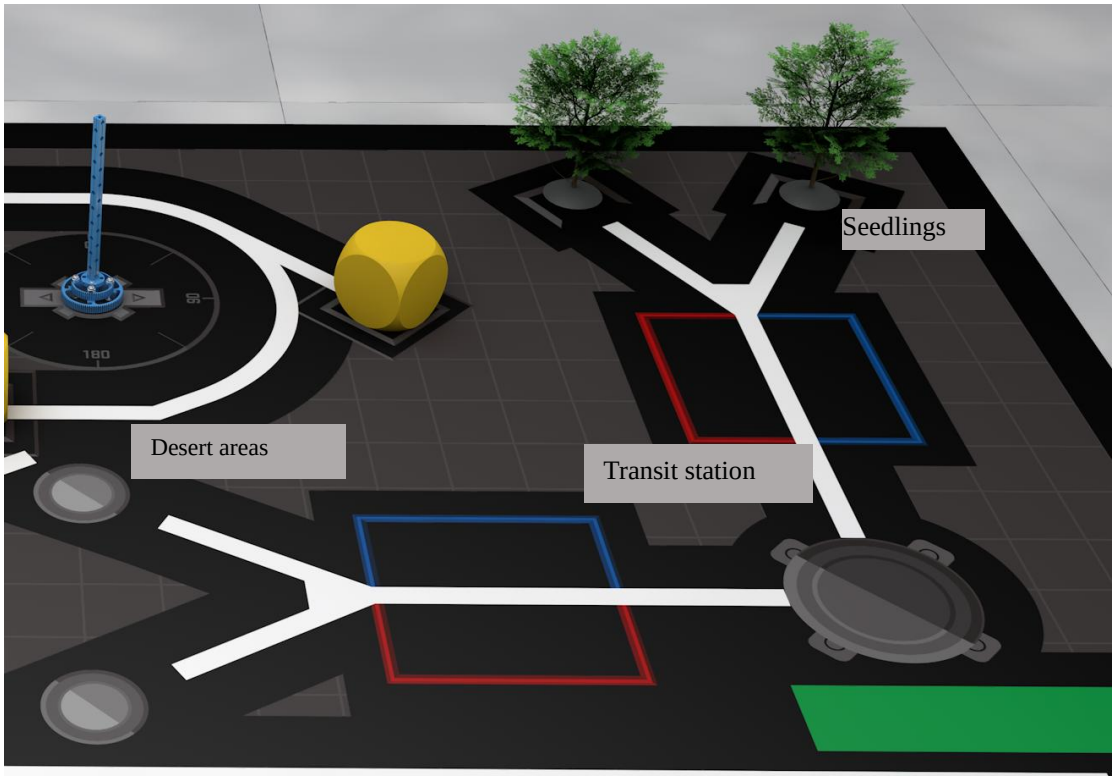
2.10.1 The conversion of household garbage to fuel gas

1) There is a fuel gas fermentation tank and a fuel gas station on the arena as shown in the figure below.
2) The robot of the Blue team starts from the blue start-up area and pushes the fuel gas fermentation tank located in the transport junction to the gas station to produce gas; the robot of Red team passes smoothly by this point and turn right.
3) If the stationary status of vertical projection of the fuel gas fermentation tank enters the gas station, 10 scores can be obtained, and if the robot of the Red team passes smoothly through the transport junction and turn right, the vertical projection of red robot is completely not in connect with the transport junction, 20 scores can be obtained.



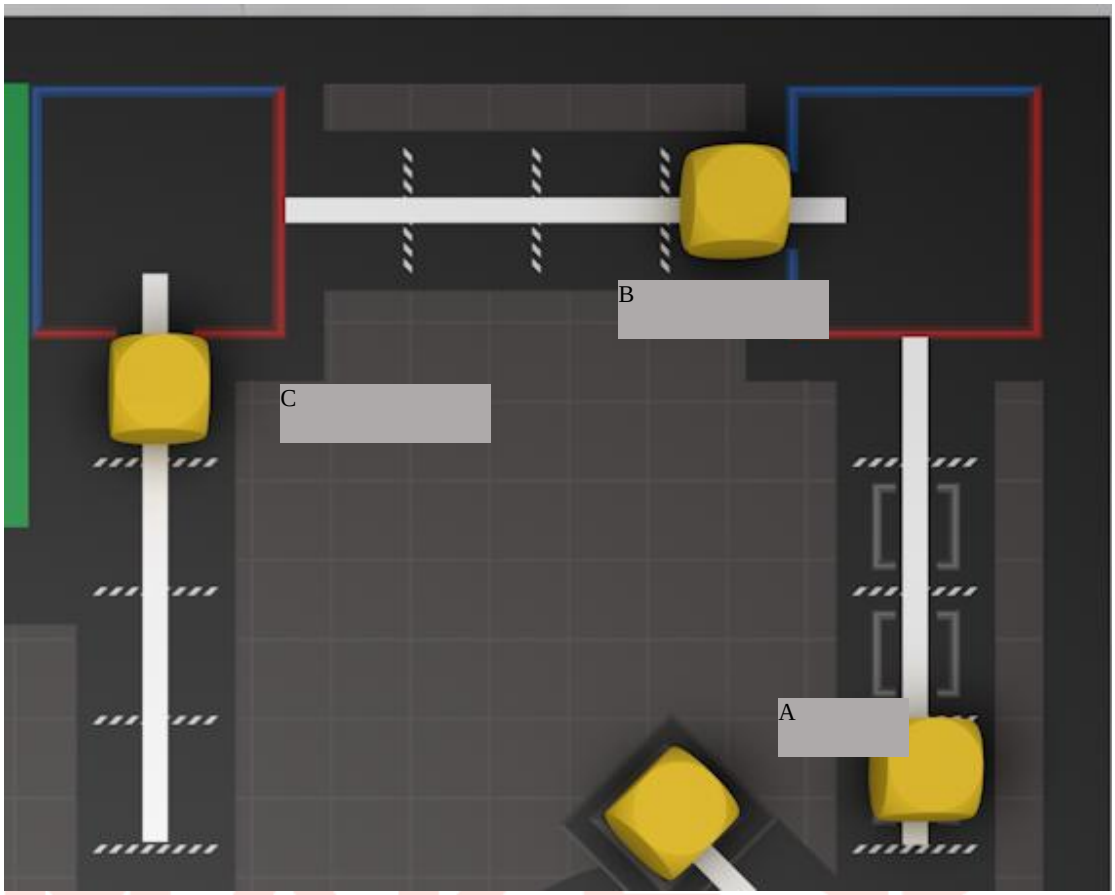
2.10.2 **Plant the desert**

1) There are two seedlings, a transit area and two desert areas on the arena as shown in the figure below.
2) If a robot transports seedlings to the transit station, the other robot transports seedlings from the transit station to desert areas for planting and the stationary status of vertical projection of seedlings enters the transit area or handover is completed, each seedling obtains 10 scores, and if the stationary state of vertical projection of seedlings enters the desert areas, another 10 points can be obtained.



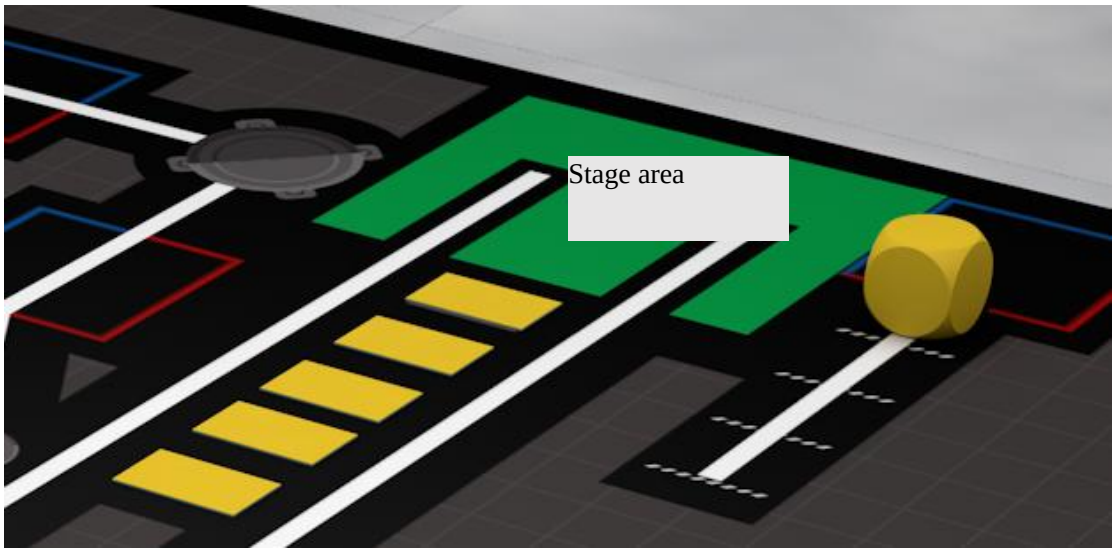
2.10.3 Clean water

1) There are three pollution cleaners on the arena as shown in the figure below.
2) If the robot detects the location of the pollution cleaner A, pushes the pollution cleaner B to the areas with the same scale, then 10 scores will be obtained; if the other robot pushes the pollution cleaner C to the areas with the same scale according to the location of pollution cleaner A, then an additional 10 scores will be obtained.
3) If the stationary status of the vertical projection of pollution cleaner enters into the same scale area, scores can be obtained.



2.10.4 **Forest ball**

1) There is a stage area on the arena as shown in the figure below.
2) One robot enters into the performance area to play music, and the other robot enters into the stage area to start rotating and dancing to complete the action synchronously, 10 scores can be obtained.



3. Competition process

3.1 Team registration

After competing teams arrive at the venue, team members and mentors shall bring ID cards to the registration counter to sign in, register and receive material packages, which include competition brochure, entry gifts and other materials.

3.2 Presentation

Competing team members need to bring 4 copies of engineering notebook and their robot to the presentation area to sign in and wait in line to participate in on-site presentation; the presentation will evaluate students on robot knowledge by using Q & A and solving problems on site, and it takes 8 to 10 minutes to go through the entire process.

Teams shall pack e-copy of engineering notes, source code, photos of team members, robot photos, photos of building processes and videos and send them to share@makex.cc; the title of the e-mail is named as "2018 MakeX XXX Competition – team name - theme" (for example: 2018 MakeX Robotics Competition Turkey-Voyage- Blue Planet); for more requirements for presentation materials, please refer to the requirements for "engineering notebook" in the appendix.

3.3 Inspection

To ensure that participating robots complying with the rules of the competition and the safety of participants and audiences, the Organizing Committee needs to check the contestants and robots in advance.

All competing teams shall accept inspection on the day of registration and before the competition, hereinafter referred to as "competition inspection" and " pre-competition inspection ".

Teams that have missed or failed the competition inspection can be rectified before the end of the competition inspection. Competing teams need to arrive at the inspection area at least 30 minutes before the start of the competition, and teams can be qualified to enter the competition site through the pre-competition inspection.

3.4 Practice

Competing teams can participate in the practice after completing registration, inspection and presentation. Practice is carried out in the way that teams arriving first start the game first, and other teams shall wait.

3.5 Contestants' meeting

Before the start of the event, the referee will convene all competing teams to a meeting to explain matters that shall be paid attention to and the circumstances easily leading to the penalty during the competition.

3.6 Schedule announcement

One hour before the start of Qualification Matches, the organizing committee will announce the schedule, and each team has 1 hour to exchange and communicate with alliance teammates on procedures and cooperation, simulate the competition and debug robots. During this time, contestants can only conduct the debugging of robots in the area stipulated by the Organizing Committee, and mentors are not allowed to enter the site or guide contestants during the competition in any form.

3.7 Start of competition

After the referee confirms that participating teams are ready, the countdown of "three, two and one" is announced. When hearing the first character of the command of "start", contestants can touch the button to start the robot.

3.8 Robot restart

Competing teams can raise their hands to the referee at any time after the start of the competition to restart the robot. After approved by the referrer, contestants can take the robot out of the arena and can reset the program or modify it and then put it back into any of their own start-up areas or the public start-up area. The score of the task completed before the restart is valid, the restart does not restore arena props, and the task is not scored repeatedly after the restart. The competition time will not be suspended.

3.9 End of competition

Each competition lasts for five minutes. After the referee announces “three, two, one and the end of the competition", contestants shall turn off the power of the robot immediately and shall no longer contact any object on the arena. The alliance team leader can also give a hint to the referee during the game for the end of the competition in advance, and the time used for the competition at this time shall be recorded.

3.10 Score confirmation

The referee shall score according to the completion of the task by the robot, and the alliance team leader shall sign to confirm the results.

3.11 Qualification Match

Teams shall participate in four Qualification Matches, and their alliances are random. The sum of single-session scores in Qualification Matches shall be sorted, teams with the highest scores in Qualification Matches are at the top of the list and will be advanced to Championship Match. If the total scores are the same in Qualification Matches, teams with the highest total independent task scores of four Qualification Matches are at the top of the list. If the sum of independent task scores is still the same, teams spending the shortest time in finishing four Qualification Matches are at the top of the list.

3.12 Alliance selection

Qualified teams ranking the top 50% have the right to choose their own alliance teammates during the Championship Matches, teams ranking the top 50% have the right to refuse if selected, teams ranking the bottom 50% have no right to refuse, and teams ranking the top 50% choose in turn according to the ranking. The alliance formed in this session will be the alliance portfolio of Championship Matches. After the alliance selection ceremony, teammates will have 30 minutes to communicate with the teammates in the alliance, during which contestants can only debug robots within an area specified by the Organizing Committee, where mentor can neither enter, nor can they instruct the contestants on the site in any way.

The Proportion of promotion:

The competing teams are 101 or more, of which the promotion teams after the Qualification Matches will be 64

The competing teams are 51-100, of which the promotion teams after the Qualification Matches will be 32

The competing teams are 26-50, of which the promotion teams after the Qualification Matches will be 16

The competing teams are less than 26, of which the promotion teams after the Qualification Matches will be 8

3.13 Championship Match

The advanced alliances need to take three Championship Matches, take the highest single-session score in three Championship Matches as the final score of Championship Match. Alliance with the highest final score are at the top of the list. If the final score is the same, alliance with the highest alliance task scores are at the top of the list. If the alliance task score is the same, alliance spending the shortest time in finishing the match are at the top of the list. The top three alliances will be the winner, runner-up and second runner-up.

3.14 Awarding ceremony and the closing ceremony

Awarding ceremony and closing ceremony are set to reward teams for their achievements and efforts made in the event, with awards for the winner, runner-up and second runner-up as well as individual awards.

4. Award

4.1 Winner

The junior high school group and the primary school group will respectively compete to fight out a winner alliance based on the Qualification Match and Championship Match. .

4.2 Runner-up

The junior high school group and the primary school group will respectively compete to fight out a runner-up alliance based on the Qualification Match and

Championship Match.

4.3 Second runner-up

The junior high school group and the primary school group will respectively compete to fight out a second runner-up alliance based on the Qualification Match and Championship Match.

Scores ranking

The scores in each competition will rank in accordance with scores in the Qualification Match for qualification except for the winner, runner-up and second runner-up.

4.4 Best Design Award

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The Best Design Award is set for the team of creation, innovation and art, with an expectation to encourage all competing teams to be able to think outside the box, show the robot of their unique design and structure, and create a perfect fusion of aesthetics and technology with their own hands.

Assessment standards:

1. In presentation section, teams present and explain the design concepts of their own robots to judging panel.
2. Present the design draft of their robot in the phase of creation and design.
3. Their robot are distinctive to those robots in other competing teams.

4.5 Best Team Culture Award

To possess unique team culture is what MakeX Robotics Competition advocates, during the competition, all competing teams can present their team culture in various ways, for example: teams can design team posters, team flags, team logos, badges, etc., as well as surrounding gifts for the team communication to allow audiences to feel a distinctive team culture and concepts of this team, who will be the very one that we hope to seek for the best team display award.

Assessment standards:

1. During the competition, the team takes the initiative to present its team culture.
2. They can present the team culture in various ways, such as team posters, team flags, logos and badges.
3. They can participate in activities of opening and closing ceremony by an application to the Organizing Committee to perform and present their team styles.

4.6 Technology Innovation Award

A team only with creative spirit will have a steady stream of impetus. The Technology Innovation Award is set for the team whose robot has a significant breakthrough and innovation in the technology field, which hopes that the competing teams can think outside the box and introduce new things constantly during the competition.

Assessment standards:

1. In the presentation section, they should present the part of the robot which can reflect a significant innovation and technology breakthrough and introduce its design and innovation principle to the judging panel.
2. In engineering notebook, they should make a key statement on the point of the significant innovation and technology breakthrough with respect to the robot.

4.7 Civilized Image Award

This award is set for the team that during the competition, can consciously observe the security rules, maintain the foundation area clean and tidy, actively cooperate with the work of the Organizing Committee, and comply with the competition order.

The real competition is operated more from the perspectives in favor of the growth of all competing teams rather than only surrounding scores and grades. Civilized Image Award will be for the team that during the game, can observe the security rules, maintain the foundation area clean and tidy, actively cooperate with the work of the Organizing Committee, and comply with the competition order.

Assessment standards:

1. During the competition, the team can observe the security rules, maintain the foundation area clean and tidy, and actively cooperate with the work of the Organizing Committee.

2. During the competition, the teams can comply with the competition regulation and show their good team image.

4.8 Competition Spirit Award

Competition Spirit Award is set mainly to encourage all competing teams to take initiative to help other teams, comply with competition order, take initiative to maintain an equity and justice of events in the course of the competition so as to show their competition spirit of "gaining without pride, losing with grace".

Assessment standards:

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1. During the competition, the teams are willing to take initiative to help other teams, especially when other teams are in a difficult time, they are willing to lend a helping hand.
2. During the competition, the teams can take initiative to maintain the fairness and justice of competition and can calm down to solve the problems when there is any contradiction or conflict.
3. During the competition, they can show their positive energy as well as their respect of "gaining without pride, losing with grace", and they can learn to grow from the setbacks when they are facing.

4.9 Most Improved Award (MakeX Championship)

This award will be given only in the MakeX Championship for the team that makes a great coup at the Championship and has an extraordinary change and progress.

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Assessment standards: the competing team that has extraordinary progress at the Championship will be selected by an agreement of the Organizing Committee.

4.10 Annual Winner, Runner-up, Second Runner-up (MakeX Championship)

The winner, runner-up and second runner-up as per annual points will be awarded to the top three teams in accordance with total points annually.

4.11 Top Eight (MakeX Championship)

The Top Eight by annual scores will award to teams ranking 4 to 8 at the Championship in accordance with total points annually.

5. 2018 MakeX Competition

In 2018, the competition will be divided into point race, regional competition and MakeX Championship. Teams are required to obtain points by joining point race and the regional competition to win to qualify promotion to MakeX Championship.

5.1 Appeal process

5.1.1 Appeal requirements

E22. Appeals should be proposed in the "effective appeal period" in accordance with the prescribed process and follow the competition spirit of "civilized entries".

5.1.2 Detailed steps

E23. The team leaders first fill out the *Appeal Registration Form*, and then cooperate with the investigation of the Arbitration Commission. If necessary, both sides of the appeals will be demanded to reach the designated place for investigation of the situation by the Arbitration Commission. During the investigation, the presence of both sides can only be the team leaders and the contestants. The team leader of the appellate team must be in the arena. The Arbitration Commission has the right to communicate with the claimant alone without the mentors, parents, friends and relatives. In the process of the investigation, the claimant should clearly express its claim appeal and describe the objective facts without too much emotion carried.

5.1.3 Effective appeal period

E24. It's should be proposed within 30 minutes after the end of the competition.

E25. Appeals that fail to be filed within the "effective appeal period" will be considered invalid and inadmissible.

5.1.4 Arbitration process

E26. The Arbitration Commission consists of the referee, arbitration consultants and technical directors of the competition. The Arbitration Commission is responsible for accepting appeals appearing in the competition and conducting arbitration investigations to ensure the smooth progress of the competition and the fair and just results of the competition. Replay video and photos of any competition may be only for reference of the Arbitration Commission, which are not used as the evidence of arbitration due to the possibly inaccurate results by the shooting angle.

5.1.5 Arbitration results

E27. Arbitration results are divided into "maintain the original competition results" and "replay". The Arbitration Commission will give the final arbitration results, for which both sides cannot appeal again.

5.1.6 Replay processing

E28. Due to system failure, site damage and technical reasons, the referee group finds that the result of the competition is invalid, or due to force majeure, the competition is interrupted, the referee group will confirm in writing to request the replay of the two sides after verification and discussion. No replay will occur due to the interruption or even termination of the competition caused by any robot failure (including but not limited to mechanical/electrical/software/communication failure, etc.), operation error and insufficient battery.

6. Participate in the event

6.1 Contestants

The contestants in Blue Planet primary school group should be within 5-13 years old, and the contestants in Blue Planet junior high school group should be within the age of 5-16. It's allowed that competing teams of lower age participate in the competition of the higher age group; however, it's not allowed that the competing teams of the higher age group participate in the competition of the lower age group.

6.2 Mentor

Each team must include 1 or 2 mentors.

6.3 Marked materials

Each team must have a team logo, team name and team slogan. It is recommended that the teams show their team culture in the form of uniforms, team flags, posters, badges and base decorations.

6.4 Registration for the competition

The team can enter the competition registration page to sign up for competition.

6.5 Competition information

The match information includes but not limited to the official information provided by the Organizing Committee, such as match manuals, equipment guides

and regulation videos, etc. The contestants are obliged to pay attention to the update of the competition information before entering the competition. The problems caused by the fact that the contestants fail to pay attention to the update of the competition information shall be borne by the contestants on their own.

6.6 Competition manual

The MakeX Robotics Competition Committee will revise and improve the *Competition Manual* as the progress of the event. Contestants and mentors are required to use the latest version of the *Competition Manual.*

6.7 Competition statement

MakeX Robotics Competition Committee will revise and improve the *Competition Manual* as the progress of the competition. The latest version of the *Competition Manual* will be announced through the official website www.makex.cc. Please refer to the section of "event information update" for details.

6.8 Program brochure

Contestants are required to pay attention to the *Program Brochure* before each competition. If some rules are updated in the *Program Brochure*, the updated rules in the *Program Brochure* shall prevail.

6.9 Entry requirements

The Organizing Committee has the right to disqualify any contestant for any reason, including but not limited to the failure to meet safety or technical requirements or material breach of sports spirit and competition fairness.

7. Disclaimer

Contestants need to conduct fully safeguarded measures in the production of robots. The robot parts used need to be purchased from regular manufacturers. The reform and usage of parts with potential safety hazard must comply with the national laws and regulations and quality and safety standards, and be manufactured and operated by personnel with the relevant professional qualifications. In case of any acts of the contestants, during the process of manufacturing and participating in the competition, which may violate any national laws and regulations and safety

specifications, all the consequences shall be borne by the contestants themselves.

8. Copyright statement

The rules are copyrighted by MakeX Robotics Competition Committee. Without the written consent of the Organizing Committee, any organization or individual shall not use it for commercial reprint, including but not limited to any online media, electronic media and written media.

9. Appendix

9.1 Engineering notebook of MakeX Robotics Competition - Blue Planet (template)

1. Basic information

Team name		Team members	
Team No.			
Team slogan		Team leader	

2. Robot introduction
3. Personnel division
4. Building schedule
5. Design inspiration/sketches
6. Technical principle
7. Building steps (attached with clear pictures)
8. Problems encountered and solutions
9. Summary of optimization direction
10. Suggestions for the competition
11. Feelings and other words (optional)

Report requirements

The report is divided into a text section and a video section.

1. **Text report**
   - The text section should be written in accordance with the template of "Engineering notes of MakeX Robotics Competition ".
2. **Video**
   - At the beginning of the video, a note board is needed to display the following contents: team name, team number, shooting date (be accurate to the month).
   - The video covers demonstration of robot function, some moments of robot building and interview of team members.
   -
   - It's recommended that the video is shot in well-lit conditions, and the end of the film shall be coupled with the names of director and actors (for whom the nicknames can be used).

- Video lasts for 5 minutes at most, allowing to be edited.

3. Materials required

- Source program (in the form of appendix)
- Group photo of team members
- Work photos
- Photos for building process
- Video (allowing to be edited)

A clear version is needed for the materials, and the photos may be attached to the document. Please create a separate folder to store photos, and package the folder together with the documents and video to send to MakeX Robotics Competition Committee.

9.2 Pre-competition Inspection list of Blue Planet

MakeX pre-competition robot inspection list (Blue Planet)					
School name		**Team name**		**Team No.**	
Competition date			**Competition session**		
Inspection time					
Robot size and weight					
No.	**Examination item**	**Specific requirements**			**Status**
1	**Robot size**	The initial size of the robot at the beginning of the competition shall not exceed: 25cm (length) * 25cm (width) * 25cm (height). The modified size of the robot in the process of the competition shall not exceed: 30cm (length) * 30cm (width) * 30cm (height).			
2	**Robot weight**	Each robot cannot exceed 5 kg (including the weight after the intensive modification and the battery installation).			
Security					
No.	**Examination item**	**Specific requirements**			**Status**
3	**Dangerous structure**	In the process of loading and unloading, handling, transporting and using of the robot, the structure which may cause harm to the personnel needs to be of safety protection.			
4	**Damage to the site**	In the process of loading and unloading, transporting and using of the machine, there shall be no acts that will obviously damage the site.			

5	**High-power tools**	In the process of loading and unloading and operation, there shall be no high-power dangerous equipment.	
6	**Unsafe energy storage equipment**	Safety shall be guaranteed for unsafe energy storage equipment (springs), etc. in the process of use.	
8	**Personnel safety**	The contestants should wear goggles; long hair (if any) should be tied up; the contestants are prohibited to wear open-toed shoes to be in the site.	
8	**Materials strictly prohibited**	Flammable gases, equipment related to firework, hydraulics, switches containing mercury, exposed hazardous materials, unsafe weights, designs that may create entanglement and competition delays, sharp edges and corners, materials containing liquids or jelly, and any parts which possibly bring the robot's current to any part of the site.	
Robot module			
No.	**Examination item**	**Specific requirements**	**Status**
10	**Master control**	使用大赛指定主控 Use the specified mCore.	
11	**Power**	The batteries with designated parameters in the competition are taken as the power supply modules and fixed within the robot in security; only one battery is used for each robot.	

13	**Self-customized parts and accessories**	Self-customized parts available: plates, profiles, 3D printing parts, metal, wood, plastic, rubber and magnets; requirements for usage of accessories: it's allowed for the use of rope, cable, wire, spring, rubber band, leather hose, medical rubber hose, punching sheet and injection molding products; complete commercial product components and system wheels with a single degree of freedom are allowed; multi-DOF commercial product components are not allowed.	
14	**Sensors which may emit light and sound**	In addition to the indicator light coming with the master control and the sensor, and the light source matching with the sensor, there shall be no other light sources;	
15	**Other sensors**	。 Only the electronic sensors produced and sold by the official equipment supplier "Shenzhen Makeblock Co., Ltd." can be used.	
17	**Motor**	Only the motor or the motor of the same type provided in the official equipment can be used by the competing teams	
19	**Separation/shedding**	The part separated with the main body shall not appear in the competition for the robot; arena parts can be separated from the robot	
20	**Interference**	Can not disturb the electronics and sensors of other robots	
No.	**Examination item**	**Specific requirements**	**Status**
22	**Submission of the engineering notes**	The engineering notes containing robot control source codes shall be submitted prior to the competition.	
23	**Site pollution**	。	

		Materials such as lubricants used by robots shall not contaminate the arena or other robots.	

Team statement

The robot of our team complies with the event rules of MakeX, including design and build process of the robot. We will also conduct self-tests during the competition to ensure the robot complying with the rules.

Mentor’s and team leaders' signature:

Inspection personnel notes

Signature:

MakeX Robotics Competition Committee

E-mail: info@make.cc

Official website: www.makex.cc

Official forum: bbs.makex.cc

Facebook:@MakeX

YouTube:@MakeX Robotics Competition

WeChat