



International
**ENGINEERING
EXPO 2024**

วิศวกรรมแห่งชาติ ๒๕๖๗

Driving
Sustainability
Responsiveness

24-26
July 2024
OSNCC
Bangkok

"Battle Robot 2024" Competition Rules

July 25th - 26th, 2024, from 09:00 - 17:00 hrs.

at Competition arena in front of Ballroom, Level 1, Queen Sirikit National Convention Center

The background and significance of Battle Robot Competition:

From the past to the present, engineering technology has played an increasingly important role in daily life, facilitating convenience, comfort, and even meeting fundamental needs for livelihoods. Furthermore, with increasing populations, there has been a corresponding rise in investment in human resources. However, this also brings about limitations in work, leading to heightened competition in technology. Consequently, various industries have seen continuous development, whether it is in engineering, machinery, construction, or electrical power.

Additionally, there has been an integration of new scientific advancements in technologies such as digital systems, mechatronics, and energy systems. When these developments are combined, they lead to significant progress. Hence, robotics has been developed to support human labor, aiming to reduce work limitations, mitigate hazards during work, and lower production costs.

For these reasons, The Engineering Institute of Thailand Under H.M. The King's Patronage, has organized the Battle Robot competition. This serves as a platform for students, learners, and the general public to exchange experiences in robotics. It fosters enjoyable competition and showcases the compassion of participants in the competition.

Purposes of the Competition:

1. To enhance creativity and innovation in new technology among participants.
2. To develop knowledge and skills in invention and innovation for further advancement.
3. To promote sportsmanship among participants.



International **ENGINEERING EXPO 2024**

วิศวกรรมแห่งชาติ ๒๕๖๗

Driving
Sustainability
Responsiveness

24-26
July 2024
QSNCC
Bangkok

Schedule:

- Competition Registration: From now until June 30th, 2024.
- Date: July 25th - 26th, 2024, from 09:00 - 17:00 hrs. at the competition arena in front of Ballroom, Level 1, Queen Sirikit National Convention Center.

Robot Specifications:

1. Robots must have a maximum size of 350x350x350 millimeters and can extend their mechanisms for combat, with size modifications not exceeding 500x500x500 millimeters.
2. The total weight of the robot must not exceed 10 kilograms (excluding remote control).
3. Power supply should not exceed 36 volts.
4. Pneumatic power should not exceed 6 bars (if applicable).
5. Robots must be wireless.
6. There are no restrictions on materials used to build robots, and it is necessary to install combat weapons controlled by remote control, with a minimum of 1 weapon (no limit on the number of weapons).
7. Robot movement can be in any form.

Weapon Restrictions:

1. Combat weapons can be installed, but projectile weapons or any weapons that shoot parts out of the robot are prohibited. This includes the use of water, fire, gas, or any liquid sprayed at opponents. Weapons must not pose any danger to controllers, spectators, or judges. If the judges deem any equipment used as a weapon to be potentially hazardous, participation in the competition will not be permitted until modifications are made according to the judges' discretion.



International **ENGINEERING EXPO 2024**

วิศวกรรมแห่งชาติ ๒๕๖๗

Driving
Sustainability
Responsiveness

24-26
July 2024
OSNCC
Bangkok

2. Robots must have weapons that can move and be controlled by remote control, with a minimum of 1 weapon and no limit on the number of weapons.
3. There should be no signal interference or disruption of opponent robots' controls. Any interference detected will result in immediate disqualification from the competition.

Arena Specifications:

1. The structure is a square with dimensions of 4,800x4,800 millimeters, standing at a height of 100 millimeters above the ground, and featuring raised edges measuring 300 millimeters in height. It's located in a secure area.
2. The arena is divided into 2 sides, each with a release point for robots, measuring 400x400 millimeters.
3. The competition field will have a 2.5-kilogram heavy mallet on each side opposite the robot release point. The mallets are of the press-down type and cannot be held down (competitors can operate them themselves).

Team Formation:

1. Team members should not exceed 5 people.
2. Participants and team members must demonstrate sportsmanship. Inappropriate behavior will result in a warning, and repeated offenses will be considered for immediate disqualification at the discretion of the judges.
3. Participants are not restricted by educational qualifications, gender, or age.

Competition Rules:

1. When called to compete, robots and participants must reach the designated point within 2 minutes.
2. The competition format is Double Elimination.



International **ENGINEERING EXPO 2024**

วิศวกรรมแห่งชาติ ๒๕๖๗

Driving
Sustainability
Responsiveness

24-26
July 2024
OSNCC
Bangkok

3. There will be 1 minute provided for robot preparation before each match.
4. If a robot fails to move or cannot leave the starting area within 10 seconds after the start signal, it will be disqualified immediately.
5. Robot substitution during a match is not allowed.
6. Each match will last 3 minutes, with details as follows:
 - 6.1 Both teams can engage in combat in any manner. If a robot causes its opponent to be unable to move or compete within 10 seconds, the immobile team will be declared the loser (a knockout). Both robots must not make physical contact during this time.
 - 6.2 Teams can request to forfeit during the match. Once a team forfeits, the opposing team is not allowed to damage the forfeiting team's robot.
 - 6.3 If there is no knockout within the 3-minute timeframe, the winner will be determined by the judges based on the following criteria:
 - Damage points (5 points): The robot that is less damaged will receive 5 points, while the robot that is more damaged will receive 0 point. Damage assessment will consider damage inflicted by both robots, including self-inflicted damage.
 - Aggression (3 points): A robot attempting aggressive actions throughout the match without fleeing or waiting for the opponent's attack will receive 3 points. Both teams can receive an equal score.
 - Control (3 points): Scoring is based on the team's ability to control their robot, agility in finding the opponent's weak points, and evading the opponent's weapons. Both teams can receive an equal score.
7. If both robots can continue fighting despite losing parts, the match will proceed. The detached parts will be considered obstacles for that round.
