

Exploring Universal Human Values Worldwide

Net Zero Carbon Emission Technology and Creativity Competition

Background

More than 130 countries have committed to achieving "net zero emissions" by 2050. As of March 2022, Taiwan has also released a framework outlining 12 critical strategies for net zero and negative emission technologies, which cover areas such as construction, transportation, industry, power, and carbon removal. Additionally, four transformational strategies have been identified for energy, industry, life, and society, along with two fundamental aspects of technological research, development, and climate legislation. Nine critical strategies specifically aim to develop net zero and negative emission technologies. These include wind power, solar power, hydrogen power, advanced energy, power systems and energy storage, energy efficiency, carbon capture, utilization and storage, electrification and decarbonization of transportation, zero waste and circular economy, and net zero green living.

As an organization committed to the net zero eras, we are responsible for cultivating talent in this field. For this purpose, we have been running the "TECO Green Tech International Contest" since 2006, a contest for university students focused on robotics and Green Tech. This competition has produced outstanding results, especially in the international Green Tech competition, which has been held for 12 years. Unfortunately, due to the global impact of COVID-19, the competition was suspended in 2020. However, we are pleased to announce that with the support of the National Taiwan University, the competition will resume in 2023. Under the guidance of Dr. Yu-Min Peng, an expert appointed by the Industrial Technology Research Institute, the competition's technological focus will expand to "Net Zero Carbon Emission Technology."

To further our mission and expand the influence of talent development through competition, we aim to achieve the following goals:

1. Establish an information service platform for "Net Zero Carbon Emission Technology."
2. Showcase net-zero technologies.
3. Hold a forum on net zero technology.

We hope this competition will promote technical exchanges and breakthroughs among participating teams and create an annual net zero carbon emission technology event. The competition will be named "Net Zero Tech International Contest @ Taiwan."

Objectives

1. Encourage school teachers to research and develop net zero and negative emission technologies.
2. Assist school teachers in cultivating young talents in net zero and negative emission technologies.
3. Promote domestic and international net-zero technology experts to connect and cooperate.
4. Establish a "Net Zero Carbon Emission Technology" information platform and a technology exchange network among industry, government, academia, and research institutions.
5. Enhance social consensus on energy conservation and environmental protection.
6. Contribute to implementing the four transformational strategies of energy, industry, life, and social system.
7. Create a professional and effective technology creative competition with "Net Zero Carbon Emission" as the central theme.

Competition Details

1. Advisors: Ministry of Education
Ministry of Economic Affairs
National Science and Technology Council
2. Organizers: TECO Technology Foundation
National Taiwan University.
3. Co-organizers: Industrial Technology Research Institute
Taiwan University Alliance for Sustainable Governance
University System of Taiwan
National Taiwan University System
University System of Taipei.
4. Chairperson: Dr. Jyuo-Min Shyu
(Chairman of the 30th TECO AWARD Jury Committee)
Co-Chairpersons: Dr. Wen-Chang Chen
(President of National Taiwan University)
Dr. Yu-Min Peng
(Appointed expert by the Industrial Technology Research Institute)
5. Competition Name: Net Zero Tech International Contest @ Taiwan 2023.
6. Competition Themes: Net Zero Tech, including:

- (1) Renewable energy (wind energy, solar energy, ocean energy, geothermal energy, hydrogen energy, advanced energy)
- (2) Advanced energy storage systems, energy-efficient and low-carbon emissions
- (3) Negative carbon emissions, carbon capture, storage, and utilization technology
- (4) Electric vehicles, energy-saving motors, green transportation
- (5) Waste disposal and purification technology, zero waste and circular economy, green building
- (6) Energy-saving technology (production, manufacturing, residential and commercial buildings, green building design, and lifestyle)

7. Participants:

Individuals eligible to participate in the competition include students and teachers from universities worldwide, including undergraduate, master's, and doctoral students. Each team must have at least four members (including a supervising professor), and members can be from different departments within the same university. Each person can only register for one team.

8. Competition:

- (1) Registration: from March 1, 2023, to June 30, 2023.
- (2) Registration method: go to <http://www.tecofound.org.tw/greentech-contest/2023>
 - a. Apply for an account.
 - b. Click on the verification link in the email you'll receive to activate the account.
 - c. Log in to the account and fill in the information, which includes:
 - (1) Work title, team members, student identification, and other personal information.
 - (2) Creative motivation and process.
 - (3) Research objectives.
 - (4) Brief introduction of the work.
 - (5) Problem-solving and technical value.
 - (6) Technical creativity.
 - (7) Technical content and feasibility.
 - (8) Work proposal and attachments (limited to PDF files, each within 10MB, and a maximum of 6 files).
 - d. Precautions:
 1. When registering, fill in the technical field to which the work belongs in the category in Chinese or English.
 2. Team member names, work titles, proposals, and attachments cannot be changed after the deadline.

3. The preliminary round employs an anonymous scoring system to ensure fairness in the competition. All data, except for "team information," such as school names, participants, and supervising professors, must remain undisclosed. The judging committee will resolve to cancel the competition eligibility of any violators.
4. Products already publicly sold cannot participate in the competition.
5. Documentation layout:
 - a. In Chinese or English.
 - b. Margin: Top and bottom: 2.2 cm; Left and right: 1.5 cm.
 - c. Font: Standard font, 12 pt.
 - d. Spacing: standard.
 - e. Line spacing: fixed line height of 21 points.
 - f. The total number of pages: limited to 12 pages for the entire content.
6. Competition documents must not violate the intellectual property rights of any third party. Those who do so will be held responsible, and the organizers will not assume liability.
7. After verifying the team, work data, and anonymity, the organizer will send a "registration successful" email.

(3) Preliminary review: July 3-24, 2023.

(4) Preliminary result announcement: July 25, 2023, at 17:00 on the foundation's website, Taiwan University's website, official Facebook page, and the "Net Zero Carbon Emissions Technology" platform.

(5) Finals (including the forum and net-zero technology display): Tuesday, August 22, 2023.

9. Finals:

1. Finalist teams are required to provide a 5-10 minute summary of their projects and a demo video for review by the jury from July 25 to August 13, 2023. Video files must be in MPEG-4 format and uploaded to cloud storage for download by the organizers.
2. Each team has 14-minute, which includes a presentation, demonstration, and Q&A with the judges. Supervising professors may assist.
3. A draw will determine the presentation order at registration.
4. The exhibition space for the project demonstration is limited to 250cm × 200cm.
 - a. Use visual aids instead of paper-based materials to reduce carbon footprint.
 - b. International teams participating in the finals via video conferencing may also request exhibition space as needed.
5. Participants must wear clothing identifying their school or department to showcase their team's characteristics.

6. Awards will be presented at an awards ceremony on the day of the finals, and the winning teams' information will be shared with the media.

10. Evaluation:

a. Criteria:

1. Problem-solving and technical value - 40%
2. Creativity - 25%
3. Technical content and feasibility - 25%
4. Completeness of work - 10%

b. The judges are expected to follow the principle of avoiding any conflicts of interest.

c. Preliminary review: The initial assessment is conducted in two stages, online written review and cross-evaluation. 20-30 teams will be selected to advance to the final round.

11. Awards and Prizes:

(1) Prize and Awards:

Place	Quantity	Prize (NTD)	Awards
Champion	1 team	300,000	1. A trophy for the team 2. Certificates for each team member
Runner-up	1 team	200,000	
Third place	1 team	150,000	
Innovation Award	1 team	50,000	
Humanities Award	1 team	50,000	
Honorable Mention	15 teams	20,000 each (15 teams = 300,000)	Certificates for each team member
Total	20 teams	1,050,000	

(2) Notifications:

1. To ensure the competition's high standards, awards may not be granted if necessary.
2. According to Article 14, Paragraph 1, Item 8 of the Income Tax Act of the Republic of China, prize money or allowances for competitions, contests, and lotteries shall be taxed at 10% for citizens and 20% for non-citizens.
3. The organizers will provide finalists with participation certificates. Participants who fail to wear or comply with the dress code may be disqualified at the organizers' discretion.