Net Zero Tech | International Contest @ Taiwan
2025 淨零排放科技國際競賽

國立臺灣大學
National Taiwan University

財團法人東元科技文教基金會
TECO Technology Foundation

Finalist Announcement Procedures

I. Announcement Dates :

International Contest : July 11 (Fri.), 17:00 (GMT+8)

Taiwan Contest : July 18 (Fri.), 17:00 (GMT+8)

II. Announcement Platforms :

A. Official Contest Platforms : Official Website, Facebook, Intelligent System

B. Organizer’ s E-mail : All participating teams, Departments & relevant offices

C. National Taiwan University :

- NTU Official Website、Facebook
- Office of International Affairs (OIA) Facebook,
- Office of Sustainability Website
- Other Platforms (as appropriate)

入圍決賽 公告作業

一. 公告日期：

國際賽 7月11日(五) 17：00

臺灣賽 7月18日(五) 17：00

二. 公告管道：

(一) 競賽官方：競賽官網、官方臉書、智能系統

(二) 主辦單位e-mail：全體參賽團隊、各校系所

(三) 台大管道：

- 台大官網、FB
- 國際處FB、永續辦公室官網
- 其他管道

International Contest Schedules

Registration Period

From now until June 25

Preliminary & Secondary Review

June 28 ~ July 10

Taiwan Contest June 28 ~ July 17

Announcement of Finalist Teams

July 11

Taiwan Contest July 18

Submit Final Round Materials

July 15、July 24

(Details in link ：
https://bit.ly/2025nzattachementfiles)

Final Round

August 19

(08:20-15:00)

Award Ceremony

August 19

(15:00-17:00)

Field Trip

August 20 & 21

How to participate

https://teco.tecofound.org.tw/zh-tw/pages/42/319

競賽時程

受理報名
6月25日止

初審&複審作業
國際賽 6月28日 ~ 7月10日

臺灣賽 6月28日 ~ 7月17日

公佈入圍決賽隊伍
國際賽 7月11日

臺灣賽 7月18日

決賽資料繳交
國際賽 7月15日、7月24日

資料項目與格式

https://bit.ly/2025nzattachementfiles

決　賽
8月19日

(08:20-15:00)

頒獎典禮
8月19日

(15:00-17:00)

國際賽團隊參訪
8月20 & 21日

參加辦法

https://teco.tecofound.org.tw/zh-tw/pages/42/319

Finalist Team Coordination and Action Items

Due by Tuesday, July 15th

1. Provide the Finalist Declaration by E-mail, with signatures by one advising professor and the team leader.
   Failure to provide by the deadline will result in disqualification, and alternate teams will be notified to participate immediately.
2. Join the LINE group - "International Final Round Group"
   https://line.me/ti/g/s-L343Stm2
   (1) All contest information will be announced here first during the preparation and contest period.
   (2) Please have all team members join.
   When joining, please state your "Team Number and Name ".
   (3) The team leader should notify the group once all members have joined.
3. Please fill in all information via this Google form :
   https://forms.gle/ncumtEz1SNv9eUYZ9
   (Flight information can be provided by July 24)

International Final Round Group

入圍決賽團隊配合及作業事項

於7/15(二)以前

一、以mail回傳參賽聲明書，指導教授與隊長各一人代表簽名即可。
逾時未提供以棄權處理，主辦單位隨即通知備取團隊參賽。

二、加入LINE「國際賽決賽」群組https://line.me/ti/g/s-L343Stm2

(一) 籌備與競賽期間所有競賽資訊第一時間皆在此公告

(二) 請團隊所有成員皆加入，加入時請報「團隊編號及名字」

(三) 全員皆加入時請隊長在群裡知會

三、請進入https://forms.gle/ncumtEz1SNv9eUYZ9
填寫所有資料(搭乘之航班可在7/24日提供)

國際賽LINE群組

Finalist Team Coordination and Action Items

Due by Thursday, July 24th

1. Provide the following materials :
   * Summary Table of Project Descriptions,
   * Project Introduction Video (attach the link in the Summary Table of Project Descriptions)
   * Project Introduction Poster
   * Presentation Slides-in PowerPoint
   * Power/Electricity Requirements Form
   * Methods for Receiving Prizes and Travel Subsidies
   * Travel Insurance Consent Form (to be processed by the organizing committee)
     - For teams participating in the finals only:
       Insurance coverage from August 18-20, 2025.
     - For teams participating in the finals and the international visit:
       Insurance coverage from August 18-22, 2025.

Finalist Team Coordination and Action Items

Due by Thursday, July 24th

2. Please download the specifications for submission items, formats, deadlines, and standards from : https://bit.ly/2025nzattachementfiles

3. Please upload the files to a cloud storage service the cloud within the specified time and send the cloud link via email to:

   Mr. Ian Hung

   Tel: +886-2-2542-2338 ext. 16

   Email: ian@teco.com.tw

入圍決賽團隊配合及作業事項

於7/24(四)以前

一、提供

作品介紹摘要表、作品介紹影片(影片連結附在作品介紹摘要表中)

作品介紹展板輸出檔案、決賽當日用作品簡報檔

作品展示用電力需求表、 獎金與補助旅費領取辦法

旅遊平安保險同意書(由大會辦理)

-僅參加決賽的團隊投保日期：2025年8月18-20日

-參加決賽與國際參訪行程的投保日期：2025年8月18-22日

二、資料項目、格式、時限與規格下載區https://bit.ly/2025nzattachementfiles

三、資料填寫完成後請上傳至雲端，並將連結mail 到 ian@teco.com.tw

Required Documents for International Finalist Teams – Submission Deadline

No.	Item	Format / File Specifications	Submission Deadline
1	Finalist Declaration	-	July 15 (Tue)
2	Google Form Submission-The Finalist Teams Information Questionnaire	-	
3	Join the LINE group	-	
4	Summary Table of Project Descriptions	in Word & PDF format keep the document to 2 pages	July 24 (Thu)
5	Project Introduction Video	in MPEG-4 format, within 5 minutes include the video link (via cloud storage) in the Summary Table of Project Descriptions.	
6	Presentation slides	in PowerPoint (16:9 aspect ratio) & pdf format	
7	Project introduction Poster	must be created using Adobe Illustrator, following the provided template. in Adobe Illustrator(.ai) & PDF format	
8	Power / Electricity Requirement Form		
9	Travel Insurance Consent Form		
10	Google Form Submission-Flight Itinerary		
11	Prize Money Application Form (For Non-Taiwan Teams)		
12	Prize Money Receipt Form (Taiwan Team)		

Award Mechanism

International Contest (國際賽)			Taiwan Contest (臺灣賽)		
Awards	Prize (USD)	Sponsors	獎項	獎金(NTD)	設獎單位
Champion 冠軍 LITEON Bright Future Award 光寶光耀未來獎	33,300	LITE-ON Technology Corporation 光寶科技(股)公司	Champion 冠 軍 Fubon Net Zero Tech Award 富邦淨零科技獎	1,000,000	Fubon Financial Holding Co., Ltd. 富邦金融控股(股)公司
First Runner-Up 亞 軍 Paujar Net-Zero Technology Award 寶佳淨零科技獎	20,000	Paujar Charity Foundation 財團法人寶佳公益慈善基金會	First Runner-Up 亞 軍 CHEN-YUNG Net-Zero Technology Award 勇源淨零科技獎	600,000	CHEN-YUNG Foundation 財團法人勇源教育發展基金會
Second Runner-Up 季 軍 Paujar Green Innovation Award 寶佳綠能創新獎	13,300	Paujar Charity Foundation 財團法人寶佳公益慈善基金會	Second Runner-Up 季 軍 CHEN-YUNG Sustainable Development Award 勇源永續發展獎	400,000	CHEN-YUNG Foundation 財團法人勇源教育發展基金會
CPC Corporation, Taiwan Smart Energy Award 台灣中油智慧能源獎	6,600	CPC Corporation, Taiwan 台灣中油(股)公司	Shiny Chemical Energy Saving Innovation Award 勝一節能創新獎	200,000	Shiny Chemical Industrial Co., Ltd. 勝一化工(股)公司
NTU-AIAD, Advanced Net Zero Emission Technology Award 前瞻綠能產協零碳希望獎	6,600	NTU AIAD 臺大產學交流發展協會	Advanced Green Materials Award 前瞻綠材高值獎	200,000	NTU ARC-GMST 臺灣大學前瞻綠色材料高值化研究中心
Advanced Green Energy Award 前瞻綠能高值獎	3,300	NTU ARC-GMST 臺灣大學前瞻綠色材料高值化研究中心	Paujar Green Energy Award 寶佳綠能高值獎	100,000	Paujar Charity Foundation 財團法人寶佳公益慈善基金會
Nan Pao Resins Zero Carbon Vanguard Award 南寶樹脂零碳希望獎	3,300	NAN PAO Resins Chemical Factory Co., Ltd. 南寶樹脂化學工廠(股)公司	Hua Nan Bank Net-Zero Hope Award 華南銀行零碳希望獎	100,000	Hua Nan Bank 華南商業銀行(股)公司
Excellence (13 teams) 佳作 (13隊)	1,600 / team	Paujar Charity Foundation 財團人寶佳公益慈善基金會	Excellence (13teams) 佳 作 (13隊)	50,000 / 隊	Paujar Charity Foundation 財團法人寶佳公益慈善基金會
Total	108,000 (NTD 3,250,000)		3,250,000		

Note：The prize for the International Contest matches that of the Taiwan Contest, with the exchange rate based on the remittance date in September 2025.
國際賽與臺灣賽的獎金相同，惟匯率以2025年9月匯出當日計算

Award payment unit

Awards	Prize (USD)	Award payment unit
Champion 冠軍 LITEON Bright Future Award 光寶光耀未來獎	33,300	NTU 國立臺灣大學
First Runner-Up 亞 軍 Paujar Net-Zero Technology Award 寶佳淨零科技獎	20,000	TECO Technology Foundation 財團法人東元科技文教基金會
Second Runner-Up 季 軍 Paujar Green Innovation Award 寶佳綠能創新獎	13,300	
CPC Corporation, Taiwan Smart Energy Award 台灣中油智慧能源獎	6,600	
NTU-AIAD, Advanced Net Zero Emission Technology Award 前瞻綠能產協零碳希望獎	6,600	NTU 國立臺灣大學
Advanced Green Energy Award 前瞻綠能高值獎	3,300	
Nan Pao Resins Zero Carbon Vanguard Award 南寶樹脂零碳希望獎	3,300	
Excellence (13 teams) 佳作 (13隊)	1,600 / team	TECO Technology Foundation 財團法人東元科技文教基金會

Final Team Check-in Instructions

A. Time：August 19 (Tue.), 2025, 07:40 – 08:20
(Teams that do not complete check-in for all members by 08:20 will be considered as forfeited)

B. Location：Main Information Desk, NTU Sports Center

C. Materials to Collect：

1. Identity verification
2. Contest badges and Final Round Handbook
3. Adjustment of meal items and quantities for the day
4. Confirmation of exhibition area and equipment requirements
5. Confirmation of assigned number and briefing order

D. Briefing and Demonstration Instructions：

07:40-08:50 Setup for demonstration and exhibition
08:50-09:05 Opening Briefing

決賽團隊報到須知

(一) 報到時間：2025年8月19日 (二) 07：40 - 08:20
(8:20 以前未完成全員(含指導教授)報到則視同棄權)

(二) 報到地點：國立台灣大學綜合體育館 大會服務台

(三) 資料領取：

1. 身分驗證
2. 領取參賽證、決賽作業手冊
3. 當日餐飲項目與數量確認
4. 展示區與相關設備需求確認
5. 編號與簡報順序確認

(四) 簡報與實作作業說明：

07:40-08:50 實作與展示區布置

08:50-09:05 大會說明

Final Round Procedures

Briefing and Demonstration Procedures

1. The briefing order will follow the assigned numbers.
2. 12 minutes per team (6 minutes briefing + 6 minutes demonstration and Q&A)
3. Briefings will be divided into four stages, with 4-6 teams per stage
4. Each team will have 6 minutes for their briefing.
   After each stage, the juries will proceed to the exhibition area for evaluation.
5. The first bell will ring once at the 5-minute mark and twice at the 6-minute mark to signal the end of the briefing.
6. For demonstration and Q&A, the bell will ring once at the 5-minute mark and twice at the 6-minute mark to signal the end of the Q&A.
7. After jurying is completed for each stage, the next stage will begin.
8. The time for the juries to move between stages is not counted.

決賽執行方式

簡報與實作辦法

1. 簡報順序依編號順序安排。
2. 每隊12分鐘(簡報6分鐘+實作問答6分鐘)
3. 簡報以4-6個團隊為1個階段，共分為四個階段。
4. 每隊簡報時間為6分鐘，每個階段的團隊簡報完成後，評審前往作品展示區進行各團隊的實作、評審提問及技術確認，時間限每個團隊6分鐘。
5. 5分鐘按第一次鈴提示，6分鐘按兩次長鈴結束簡報。
6. 實作問答時5分鐘按第一次鈴提示，6分鐘按兩次長鈴結束實作問答。
7. 每個階段的團隊實作評審結束，進行下一個階段的團隊的簡報。
8. 評審移動時間不計時。

簡報與實作時間表

每隊 12 分鐘
-簡報 6 分鐘
-實作問答 6 分鐘

Presentation Schedule

12 minutes per team
- 6 minutes briefing
- 6 minutes Q&A and demonstration

Presentation Order 簡報順序		Briefing 簡報 (6min.)	Demonstration and Q&A 展示操作問答(6min)
Stage 1 (6 teams)	INTL 01	09:05-09:11	09:48-10:24
	INTL 02	09:12-09:18	
	INTL 03	09:19-09:25	
	INTL 04	09:26-09:32	
	INTL 05	09:33-09:39	
	INTL 06	09:40-09:46	
Break time 休息時間		10:25-10:35	
Stage 2 (6 teams)	INTL 07	10:36-10:42	11:19-11:55
	INTL 08	10:43-10:49	
	INTL 09	10:50-10:56	
	INTL 10	10:57-11:03	
	INTL 11	11:04-11:10	
	INTL 12	11:11-11:17	
Lunch break 午餐時間		12:00-12:40	
Stage 3 (4 teams)	INTL 13	12:41-12:47	13:10-13:34
	INTL 14	12:48-12:54	
	INTL 15	12:55-13:01	
	INTL 16	13:02-13:08	
Break time 休息時間		13:35-13:40	
Stage 4 (4 teams)	INTL 17	13:41-13:47	14:10-14:34
	INTL 18	13:48-14:54	
	INTL 19	13:55-14:01	
	INTL 20	14:02-14:08	
Score Calculation 成績結算		14:40-15:40	
Award Ceremony 頒獎典禮		15:40-17:00	

Final Contest Schedule(草案)

TIME	AGENDA		DETAILS
07:40-08:50	Check-In		Participate Teams Check-in, Judges report at 07:50
08:50-09:05	Contest Guidelines Briefing		Final Round & Evaluation Briefing
09:05-12:00	Briefing and Demonstration – 1st and 2nd Stages		International Contest : 12 minutes per team Taiwan Contest : 12 minutes per team
12:00-12:40	Lunch Break		
12:40-14:40	Briefing and Demonstration – 3rd and 4th Stages		International Contest : 12 minutes per team Taiwan Contest : 12 minutes per team
14:40-15:00	Juries will calculate scores and generate a winners list.		
	VIP Visit to Contest Projects		
15:00-15:20	Award Ceremony Begins		Opening Video: Introduction to NTU, TECO Foundation, Contest Introduction of Honored Guests, Judges, Participating Teams
	Remarks by Organizers and Honored Guests		Mr. Chih-kung Lee, Chairman of TECO Technology Foundation Mr. Wen-chang Chen, President of National Taiwan University
15:20-15:40	Net-Zero Keynote Speech		Mr. Chi-Ming Peng, Minister of the Ministry of Environment
15:40-16:40	Award Ceremony Ⅰ	Taiwan Contest	First Runner-up, Second Runner-up, Fourth~Seventh Place
	Award Ceremony Ⅱ	International Contast	First Runner-up, Second Runner-up, Fourth~Seventh Place
	Award Ceremony Ⅲ	Taiwan Contest Champion International Contest Champion	
16:40-16:50	Guests Remarks	Mr. Morris Li, Chairman of TECO Electric & Machinery CO., LTD.	
		Mr. Jing-Hsiang Lai, Chairman of Paujar Charity Foundation	
16:50-16:55	Group Photo Session	Photo Session with Participating Teams and VIP Guests	
16:55-17:00	Announcement of Popularity Award Winner, Raffle (Award & Draw Presenter：Lee Chih-kung, Chairman, TECO Technology Foundation)		
17:00-	Award Ceremony Concludes		
17:00-17:20	Media Interviews, Photo Session with Winning Teams		

決賽暨頒獎典禮程序(草案)

時間	程 序		內 容
07:40-08:50	報到		參賽團隊報到 評審委員07:50報到
08:50-09:05	大會競賽辦法說明		決賽與評審方式說明
09:05-12:00	決賽簡報與實作-第一&二階段		國際賽：每隊12分鐘 臺灣賽：每隊12分鐘
12:00-12:40	午 休		
12:40-14:40	決賽簡報與實作-第三&四階段		國際賽：每隊12分鐘 臺灣賽：每隊12分鐘
14:40-15:00	評審計算成績產出得獎名單		
	貴賓參觀競賽作品		
15:00-15:20	頒獎典禮開始		開場影片：台大、基金會&競賽簡介 介紹與會貴賓、評審、參賽團隊
	主辦單位與貴賓致詞		東元科技文教基金會 董事長 李世光 先生 國立臺灣大學 校 長 陳文章 先生
15:20-15:40	淨零專題演講		環境部 部 長 彭啟明 先生
15:40-16:40	頒 獎 Ⅰ	臺灣賽	亞軍、季軍、第四~七名
	頒 獎 Ⅱ	國際賽	亞軍、季軍、第四~七名
	頒 獎 Ⅲ	臺灣賽 冠 軍 國際賽 冠 軍	
16:40-16:50	貴賓致詞	東元電機 董事長 利明獻 先生	
		寶佳基金會 董事長 賴進祥 先生	
16:50-16:55	大合照	冠軍隊伍、得獎團隊、所有參賽團隊及貴賓合影	
16:55-17:00	公布人氣獎得主、摸彩活動 (頒獎與摸彩人：東元科技文教基金會李世光董事長)		
17:00-	頒獎典禮禮成		
17:00-17:20	媒體補訪 得獎團隊於拍照區發表得獎感言		

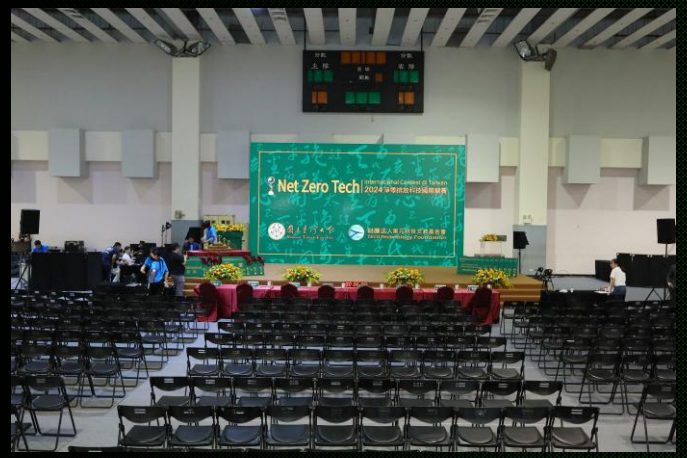
Venue Layout & Equipment

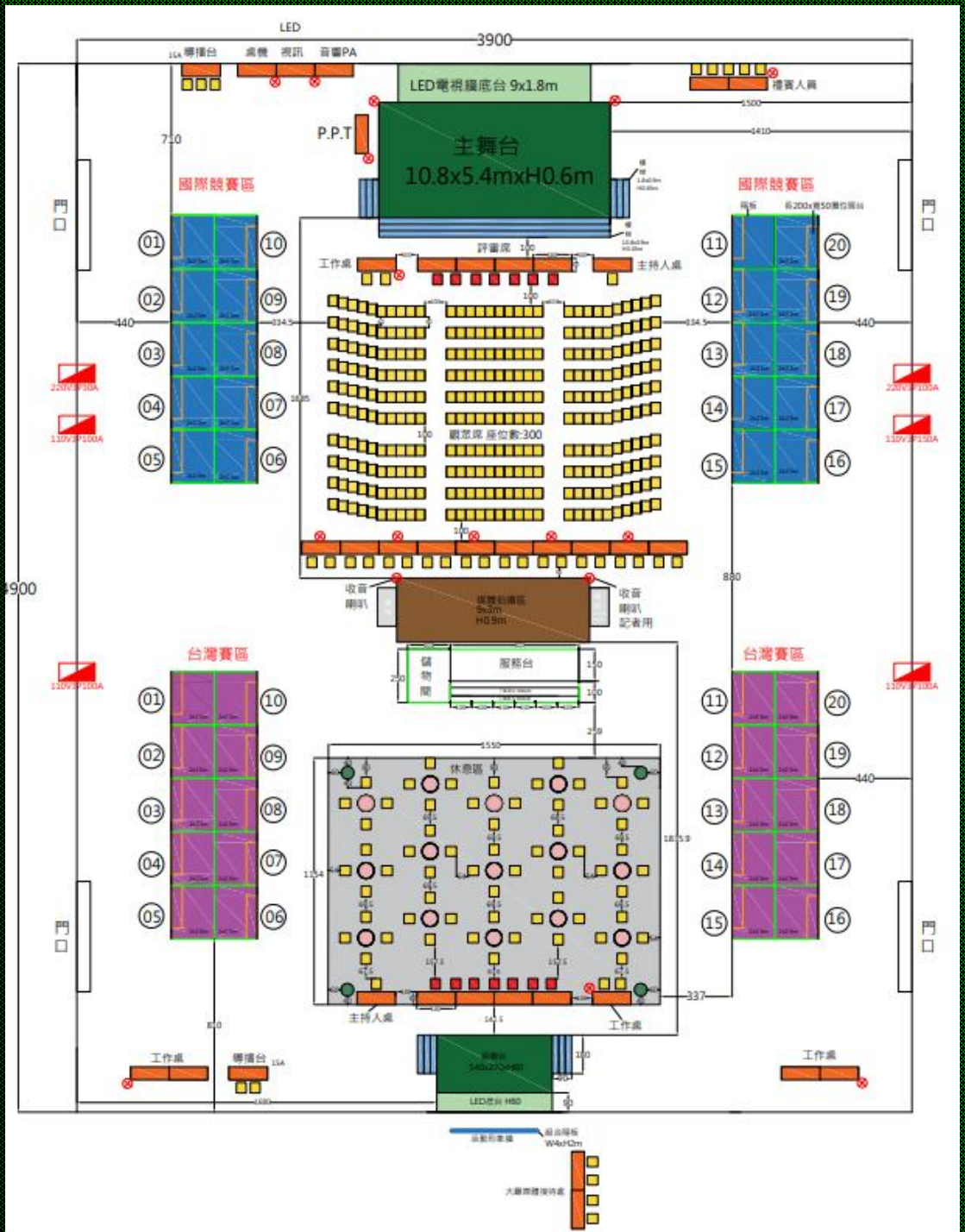
This year, both competition zones are equipped with stages and large LED screens for finalist presentations

1. International Zone: 400-inch LED screen
2. Taiwan Zone: 200-inch LED screen

Audio Management Between Zones：

1. Presentation Phase: Audio is confined to the area surrounding each stage to avoid cross-zone interference.
2. Mobile speakers will be used to provide localized amplification within each team’ s booth

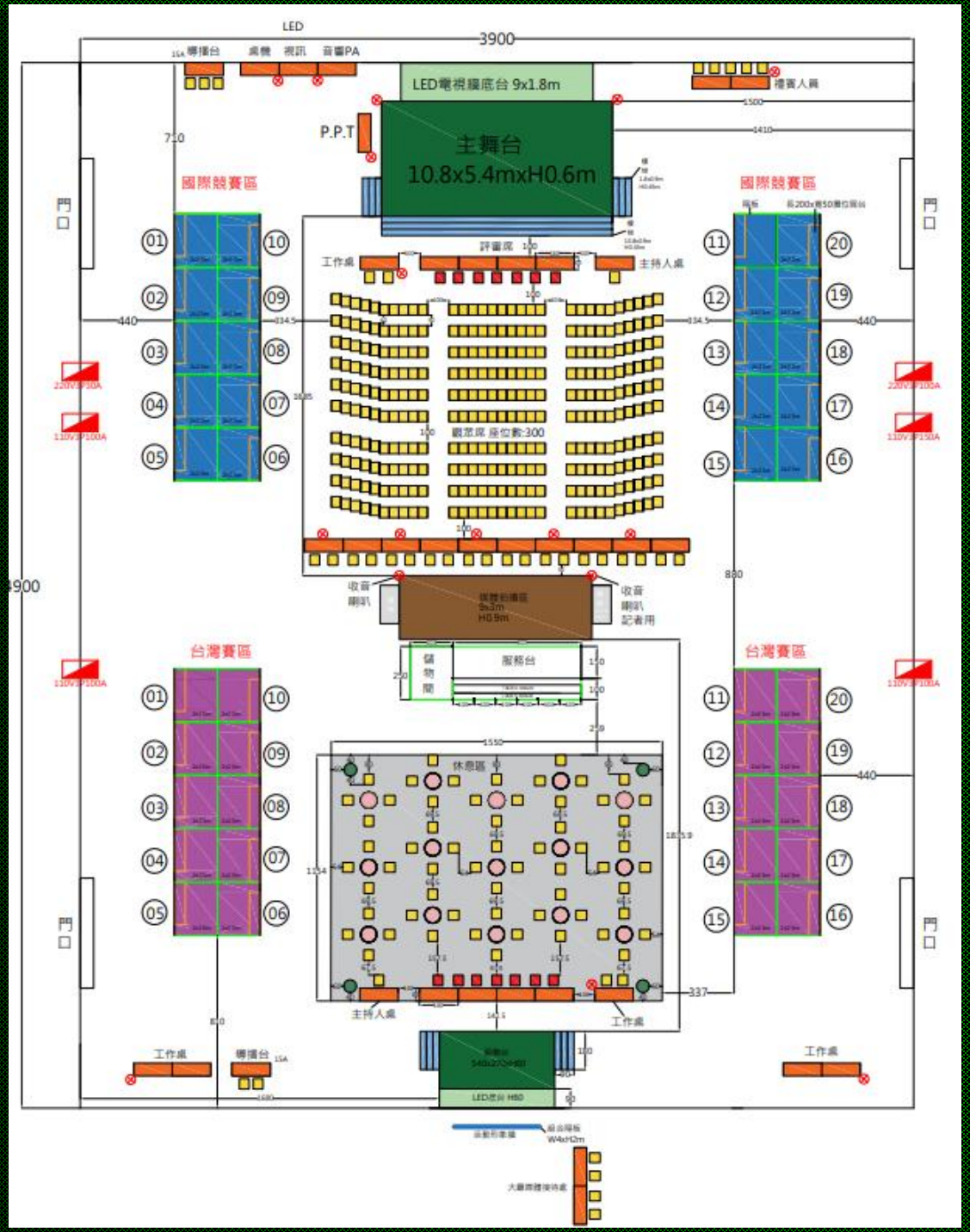




場地規劃與平面配置

今年兩賽區舞台
均設有LED大螢幕進行決賽簡報
1. 國際賽大螢幕400吋
2. 臺灣賽大螢幕200吋

妥善處理兩賽音場互相干擾問題：
1. 簡報：設定兩賽音場範圍限於舞台周邊
2. 實作：以移動式音響至各隊展區小範圍擴音



Final Presentation & Demonstration Rules

1. The emcee will follow the official competition rules to manage time and host the session. Judges will conduct evaluations based on the bell signals and emcee announcements.

2. Each team must check in and wait at the presentation area 15 minutes before their scheduled presentation time.

3. Timing begins once the presenter states the team number and project title.

4. Both the presentation and demonstration areas are open to public viewing.

5. Presentation, demonstration, and Q&A must be conducted in English.

6. Presentation Equipment Provided:

    (1) One laptop (Windows 10, Microsoft Office 2019)

    (2) LCD screen wall (supports HDMI or VGA input)

    (3) Presentation clicker, sound system, and 1 microphone

Note: If teams choose to use their own equipment, setup and removal time will be counted as part of the total presentation time.

決賽簡報與實作規定

一、司儀依據競賽規定主持與控制時間，評審委員依據鈴聲與司儀報幕執行評審作業

二、各團隊簡報前15分鐘到簡報區報到與等候。

三、簡報人在申明團隊編號及作品名稱起，大會即開始計時。

四、簡報與實作區皆開放各界觀摩。

五、 簡報、實作與問答等使用語言：英語。

六、簡報設備：

(一) 筆記型電腦乙台（作業系統Windows 10、文書軟體Office2019）

(二) 液晶螢幕電視牆（輸入源HDMI或VGA孔）

(三) 簡報筆、音響設備與麥克風1支

註：如需使用自備的硬體設備，安裝與拆卸時間均列入簡報時間計算。

Work Assembly and Exhibition Methods

A. Assembly Time:

August 18 (Monday) 15:00-17:00

August 19 (Tuesday) 07:40 until before the briefing and demonstration

B. Exhibition Space (as shown): :

1. Exhibition booth space: 250cm (width) × 200cm (depth) × 250cm (height)
2. Table: 200cm (width) × 50cm (depth) × 75cm (height)

(※maximum weight limit 20 kg)

3. Project display poster: 230cm (width) × 150cm (height)

(Content to be created by the team according to the conference regulations and will be uniformly printed and arranged by the conference).

4. Please operate only within the specified or specially permitted areas of the conference.

決賽作品組裝與展示方法

一、 組裝時間：8月18 日(一) 15:00-17:00

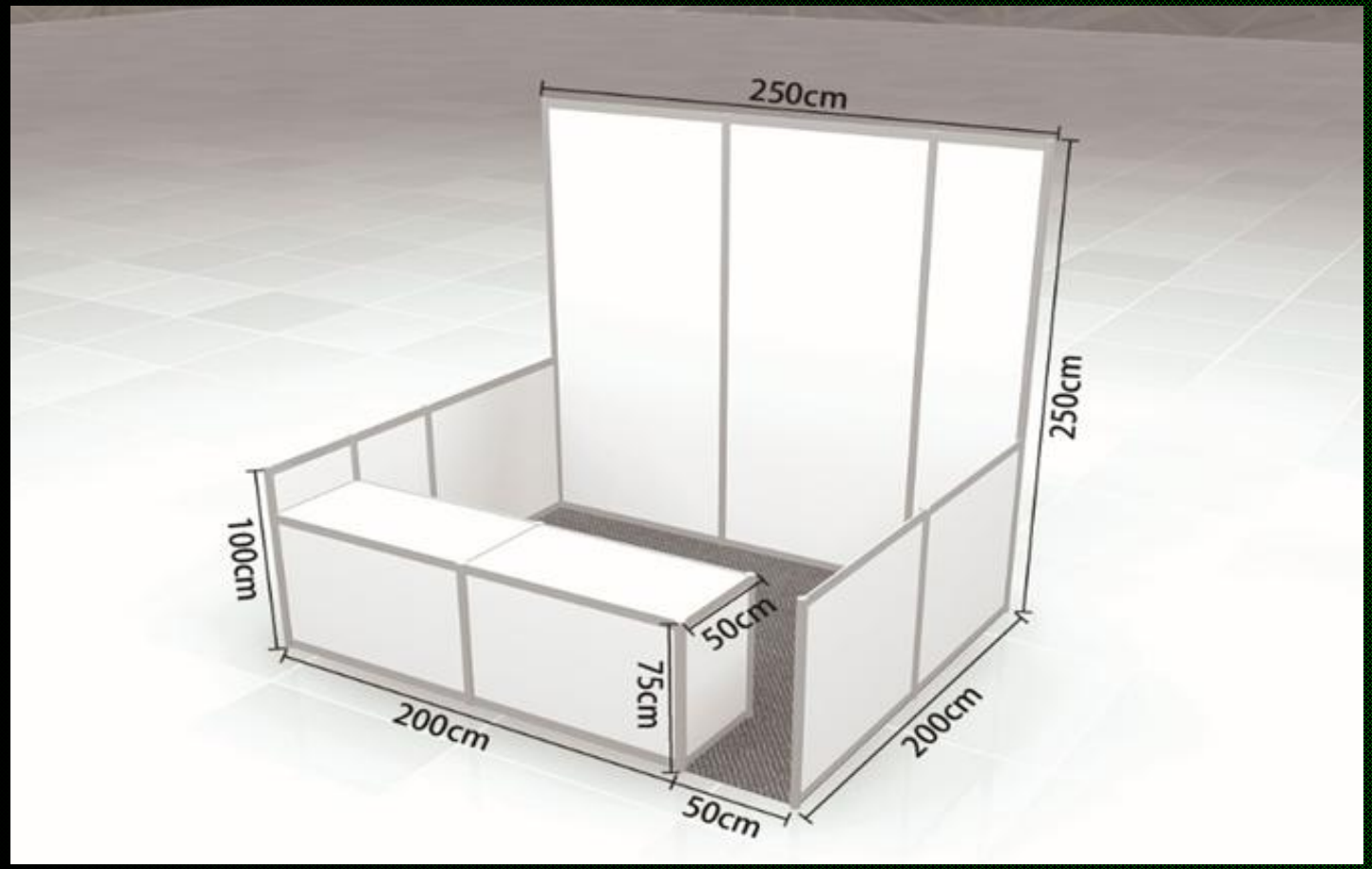
8月19 日(二) 07:40-簡報前

二、展示空間<如圖>：

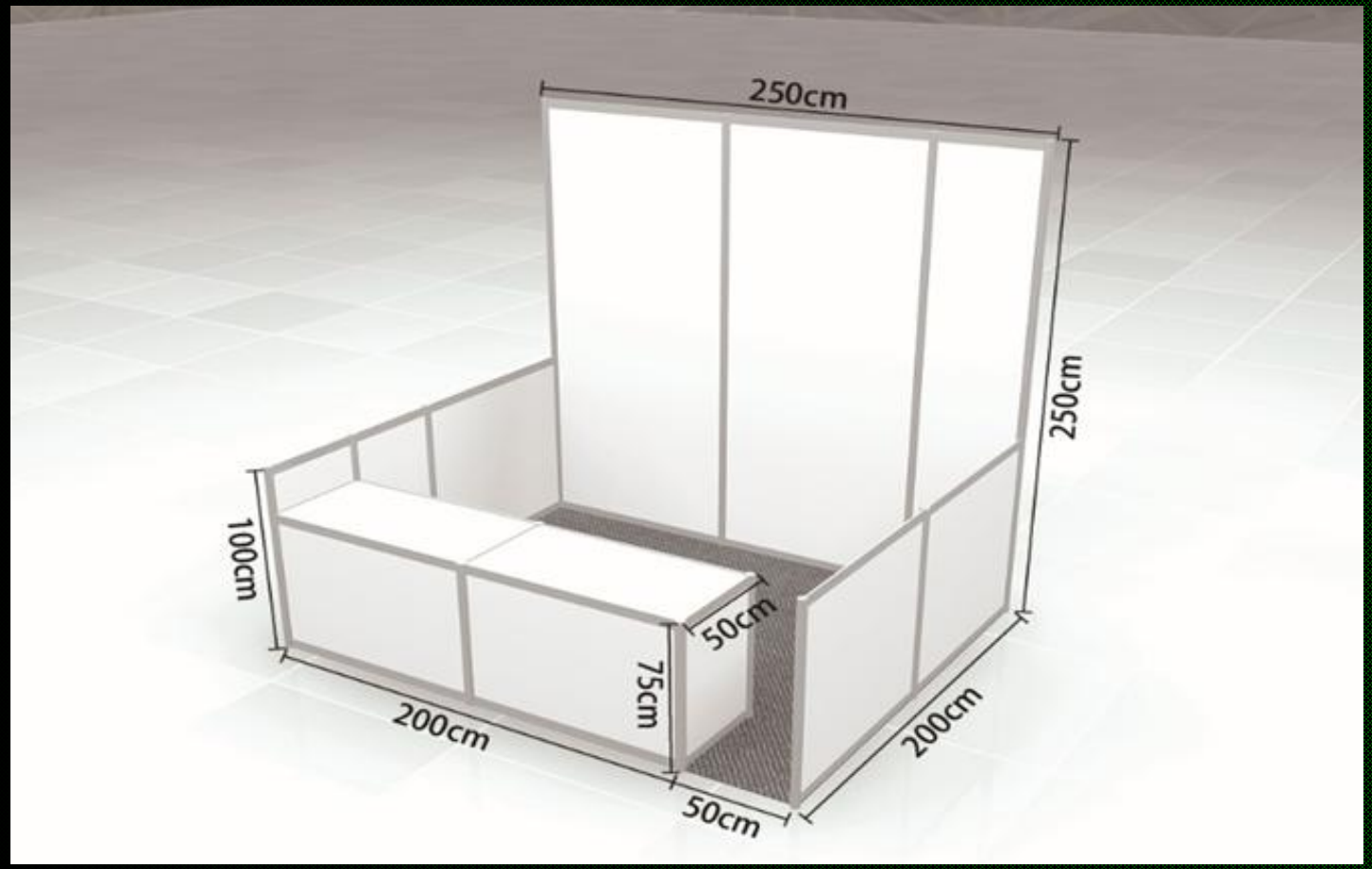
1. 展示空間250cm(寬)× 200cm(深)× 250cm(高)
2. 桌面200cm(寬)× 50cm(深)× 75cm (高) (※限重20公斤)
3. 作品展示版 230cm(寬)× 150cm (高)

   (規格由大會提供，並由團隊自行美編，大會統一輸出)。
4. 各團隊必須於大會規定或特別許可區域進行操作。

Project Display Specification Diagram



作品展示規格示意圖


250cm
250cm
100cm
50cm
75cm
200cm
200cm
50cm


國立中興大學 環境工程學系
DEPARTMENT OF ENVIRONMENTAL ENGINEERING NATIONAL CHUNG HSING UNIVERSITY

Exhibit Design Mockup (Example: 2024 Champion Team)

INTL 15 **Ultrahigh Efficiency Bidirectional DC-DC Converter for Energy Storage and Super Charger Applications**

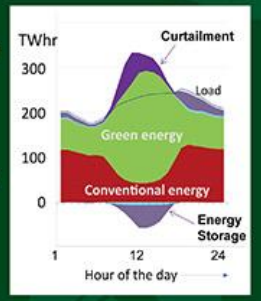
Net Zero Tech International Contest @ Taiwan
2024 淨零排放科技國際競賽

School : Virginia Polytechnic Institute and State University Department : Department of Electrical and Computer Engineering

Advisor : Dr. Jih-Sheng Lai, Dr. Hsin-Che Hsieh Leader : Bryan Gutierrez Members : Ching-Yao Liu

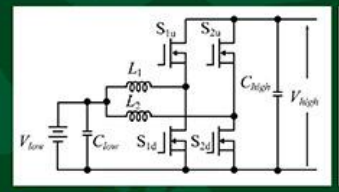
Creative motivation :

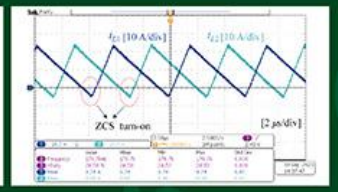
- In order to achieve the 2050 global NET-ZERO goal, the majority world energy must come from "Green Energy," Due to unpredictable energy output and mismatch between renewable generation and load demand, the excess "Green Energy" needs to be stored for curtailment.
- Currently the battery charging/discharging round trip energy efficiency of commercial product is below 90%, which needs to be significantly improved to help expedite the CO2 reduction goal. Recently with wide bandgap semiconductor device available, and the battery voltage level moving up to 1 kV range, it is possible to design a battery charging system with round-trip efficiency higher than 99.5% range, or a significant 10% saving on battery charging/discharging for energy storage and EV supercharging systems.



Research process :

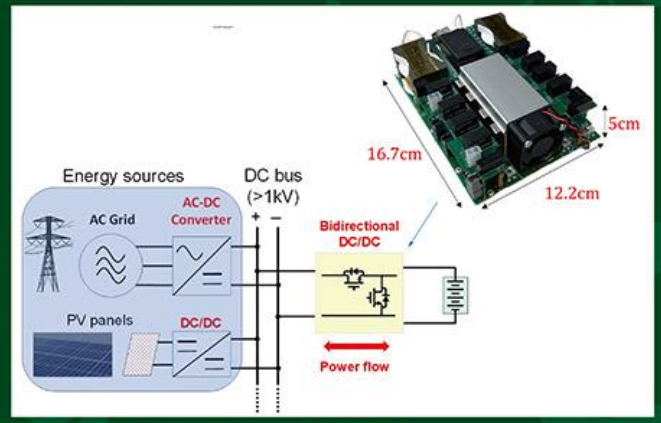
- There are two major loss components in a power conversion system. One is the switching device, and the other one is magnetic component. The switching device losses come from conduction voltage drop and switching losses. The voltage drop can be reduced by paralleling devices, but the switching loss reduction is nontrivial.
- Our approach is to eliminate the switching loss by a smart computation to eliminate the switching loss under multiple device or converter paralleled condition and to move up the switching frequency to reduce the magnetic component size and loss.
- The switching method is called "synchronous conduction mode" (SCM) or transition mode (TM), which produces a triangular current that contains a negative portion to produce sufficient energy to discharge the semiconductor junction capacitance during switching to eliminate the switching loss. As a result, we achieved 99.8% power conversion efficiency, while reducing the size and cost substantially.





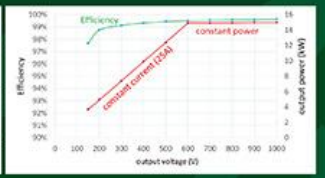
Project brief :

- The proposed system consists of (1) energy sources including renewable energy source, (2) a common DC bus with kilo-volt level, and (3) a bidirectional DC-DC converter.
- The key development here is the "ultrahigh efficiency" DC-DC converter, which is now widely used in energy storage and EV super chargers. The input is 1 kV, and the output is a battery with 800-V nominal. The project goal is to increase the efficiency while reducing the size and cost.



Efficiency :

- The peak full-load efficiency occurs under 1kV/15A condition. Its efficiency measurement is shown below. Meter reading P1 is the measured output power, P2 is input power, and the measured efficiency is 99.821%.
- The full-voltage and full-load efficiency under the entire charging range is illustrated as following. From 600V to 1kV, the converter runs in constant power mode with output of 15 kW. Below 600V, the converter runs in constant current mode with a current of 25A. from 250V to 1kV, the efficiency maintains 99% and higher.



Broad Impact :

- The first aspect of energy saving impact area is in energy storage applications. Using US Energy Information Agency (EIA) data, the annual green energy generation is 9000TWh in 2022. Assuming 10% of this energy needs to be stored, it will amount to 900 TWh. As an average, each 500-MW coal-fire power plant produces 3-TWh electricity per year, the use of our ultrahigh efficiency bidirectional DC-DC converter will help save at least 160 coal-fire plants.
- The second aspect of energy saving area is in EV super charging applications. According to International Energy Agency (IEA), the number of fast charger stations reached 2.7 million at the end of 2022 with 5% growth annually. Assume each charging station is rated 100 kW and operate 10 hours a day in average. The global energy usage will be 2.7 TWh per day, and the annual energy saving will be 49 TWh. With the use of our ultrahigh efficiency DC-DC converter, the amount of coal-fire power plant elimination will be 16.
- A total of 176 coal-fire plants will be eliminated with our 5% loss reduction.

Organizers 主辦單位：TECO Technology Foundation 財團法人東元科技文教基金會 National Taiwan University 國立臺灣大學

Co-organizers 協辦單位：Association of Pacific Rim Universities (APRU) Industrial Technology Research Institute 財團法人工業技術研究院 TUASG 臺灣永續治理大學聯盟 National Taiwan University System 國立臺灣大學系統

Advisor 指導單位：Ministry of Education, R.O.C 教育部 Ministry of Environment, R.O.C 環境部 NTSC, R.O.C 國科會 Ministry of Economic Affairs, R.O.C 經濟部

Sponsors 贊助單位：CPC Corporation 台灣中油(股)公司 NTU ARC-GMST 台灣大學前瞻綠色材料高值化研究中心 NTU AIAD 社團法人臺大產學交流發展協會 Hotai Motor 和泰集團 TECO Electric & Machinery Co., Ltd. 東元電機(股)公司 Nan Pao Resins Chemical Co., Ltd. 南寶樹脂化學工廠(股)公司 Chen-Yung Foundation 財團法人勇源教育發展基金會 Fubon Financial Holding Co., Ltd. 富邦金融控股(股)公司 Hua Nan Commercial Bank Ltd. 華南商業銀行(股)公司 Shiny Chemical Industrial Co., Ltd. 勝一化工(股)公司

Exhibit Design Mockup (Example: 2024 Champion Team)
作品展示美編設計示意圖(以2024年冠軍隊伍為例)

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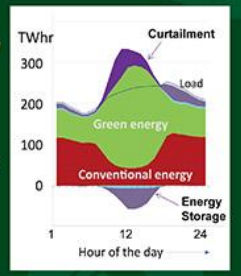

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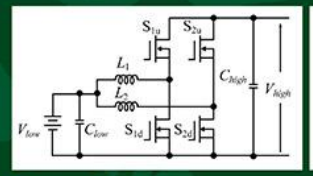

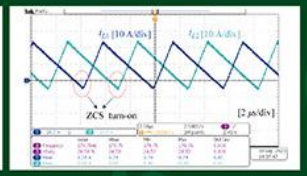

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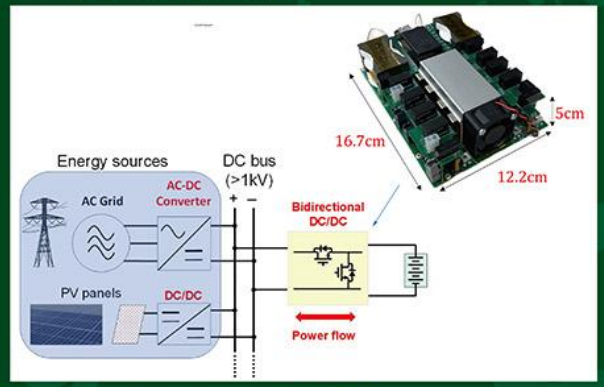

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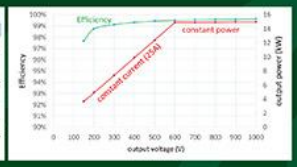

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Advisor 指導單位：Ministry of Education, R.O.C 教育部　Ministry of Environment, R.O.C 環境部　NTSC, R.O.C 國科會　Ministry of Economic Affairs, R.O.C 經濟部
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Nan Pao Resins Chemical Co., Ltd. 南寶樹脂化學工廠(股)公司　Chen-Yung Foundation 財團法人勇源教育發展基金會　Fubon Financial Holding Co., Ltd. 富邦金融控股(股)公司
Hua Nan Commercial Bank Ltd. 華南商業銀行(股)公司　Shiny Chemical Industrial Co., Ltd. 勝一化工(股)公司

Exhibit Visual Design Guideline

poster size : 230 * 150 cm

Number
Font : Arial (Bold, 140pt)
Color : Yellow (C:0 M:0 Y:100 K:0)

編號
字體：Arial(Bold, 140pt)
顏色：黃色 (C:0 M:0 Y:100 K:0)

Font：Arial (Regular, 110pt)
Color：Orange (C:30 M:48 Y:97 K:0)

字體：微軟正黑體 (Bold, 110pt)
顏色：橘色 (C:30 M:48 Y:97 K:0)

Font：Arial (Regular, 64pt)
Color：pale orange (C:16 M:26 Y:65 K:0)

字體：微軟正黑體 (Regular, 64pt)
顏色：淡橘色 (C:16 M:26 Y:65 K:0)

Please make necessary adjustments when texts and figures do not fit within the constraints of this template.
為符合表格設計，請對文字和圖形進行必要的調整

1.Please embed the image used in the file.
若有使用到圖片，請將圖片嵌入檔案中

2.Please be sure to provide both the AI working file and the PDF file.
檔案提供時，請務必同時提供AI工作檔及PDF檔

Title
Font : Arial (Bold, 100-130pt)
Color : Yellow (C:0 M:0 Y:100 K:0)
Please adjust as needed to fit the form.

標題
字體：微軟正黑體 (Bold, 100-130pt)
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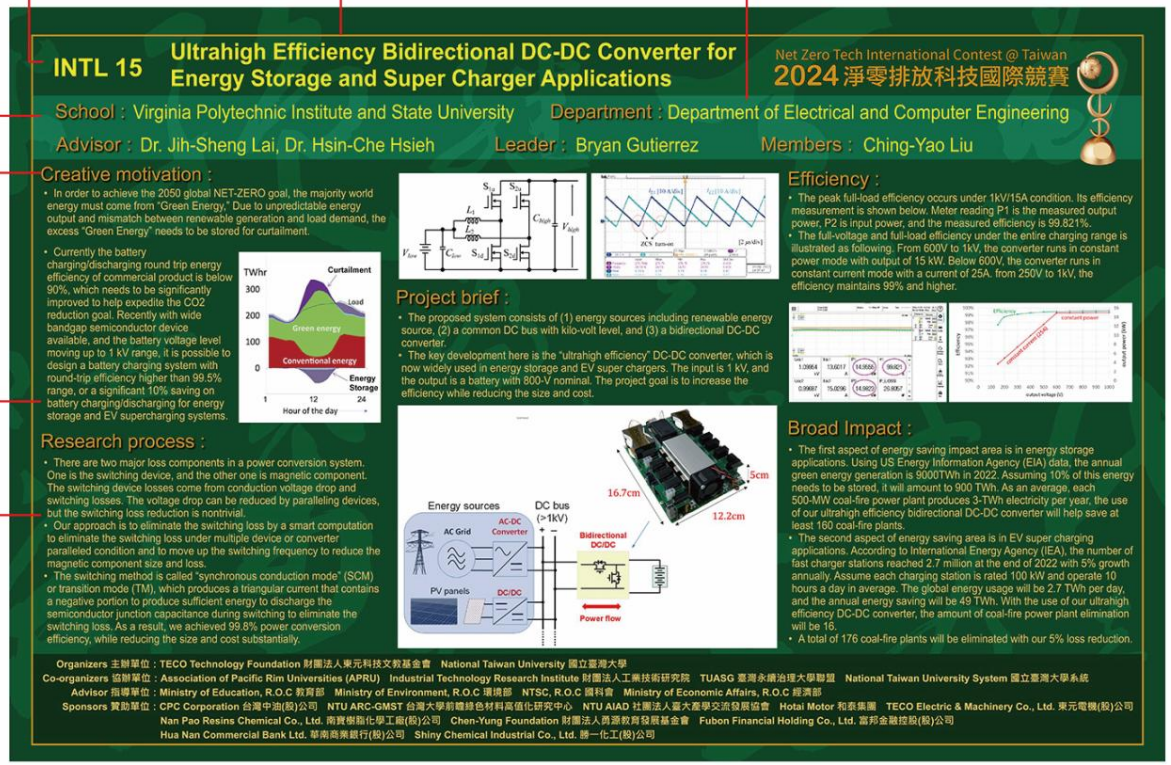

作品展示美編設計規範

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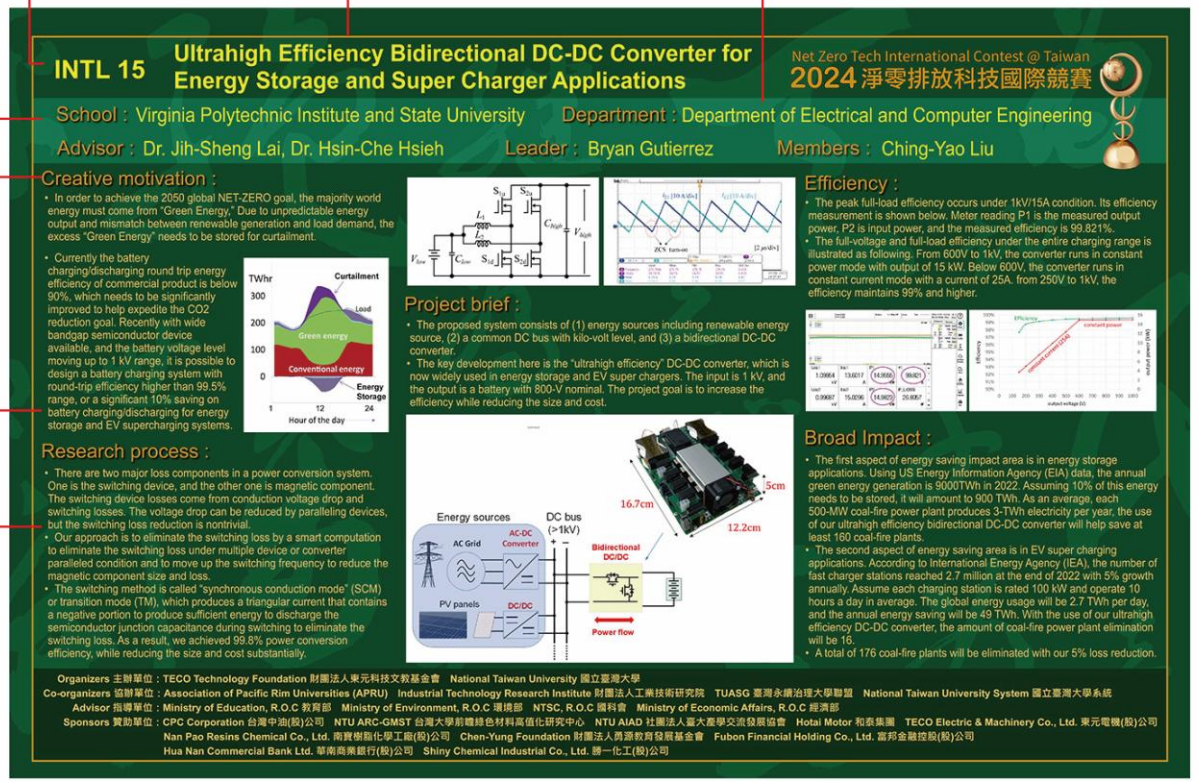

Other Notes of The Final Round

1. All participating members must wear their participant ID badges, attire that identifies their school or team, and bring their school flag for decorating their exhibition area and team photos.
2. Overseas teams must have one advising professor and two students physically present at the final round. Other members may participate via video conference.
3. Please bring your student ID for identity verification.
4. Please take care of the equipment provided by the organizing committee. Any damage incurred will require compensation at the original cost.
5. During the contest, please speak softly, and any remarks or actions that disrupt the contest's progress are strictly prohibited.
6. Drinking water will be provided at the final venue; please bring your own reusable cup.

Other Notes of The Final Round

7. Smoking, chewing gum, or betel nuts are prohibited in the venue.
8. The organizing committee will provide standardized display boards and display cases for team project exhibition areas (for project display purposes only).
9. Dismantling of exhibition areas will commence after the awards ceremony. Project display boards may be taken back by each team (please return the aluminum poles to the organizing committee).
10. For any unmentioned matters, the on-site announcements shall prevail.

決賽其他注意事項

一、所有參賽成員，均需配戴參賽證，穿著具有學校或團隊識別效果之服裝，並攜帶校旗作為布置展區與團隊拍照之用。

二、國外的團隊必須有一名指導教授與兩名學生親自出席決賽，其他成員可以視訊方式參與。

三、請攜帶學生證明以備身分驗證。

四、請維護大會提供之設備，毀損者需照原價賠償。

五、競賽期間宜輕聲細語，並嚴禁干擾競賽進行之言論與行為。

六、決賽現場提供飲用水，請自行攜帶環保杯。

七、會場禁止吸菸、嚼食口香糖或檳榔。

八、隊伍作品展示區由大會統一提供展板及展示櫃(僅供作品展示之用)。

九、頒獎典禮後開始撤場，作品展示版可由各隊自行帶回(鋁桿請交還大會)。

十、其他未盡事宜，以現場公告為準。

Prize Disbursement Methods

1. To ensure the quality of the competition, prizes may be withheld if deemed necessary.
2. Trophies will be presented at the awards ceremony.
3. Digital certificates of award will be sent by August 31st.
4. Prize money will be transferred to the designated accounts within two weeks after the final round, based on each team's completed "Prize Money Application Form" or "Prize Money Receipt Form."
   For international teams, the prize money will be transferred to a single designated account after bank account details are confirmed.
5. According to Article 14, Paragraph 1, Category 8 of the Income Tax Act of the R.O.C., for prizes or awards won from skills competitions or by chance, a 10% tax will be withheld by law. For non-Republic of China nationals, a 20% tax will be withheld.

獎金發放方式

(一) 為確保競賽品質，獎項必要時得從缺。

(二) 獎座於頒獎典禮頒發。

(三) 獎狀於8/31前寄送電子版。

(四) 獎金將於決賽後兩周內依據各團隊填妥之「獎金簽領清冊」或「領據」匯入指定帳戶；若為國外團隊，將於確認匯款帳戶後匯入單一指定帳戶。

(五) 獎金簽收者依中華民國所得稅法第十四條第一項第八類之競技、競賽及機會中獎之獎金或給與，獎金列為「競技競賽及機會中獎」，依法扣10%稅金；非本國籍人士依稅法課20%稅金。

Lottery


Net Zero Tech
International Contest @ Taiwan
2025淨零排放科技國際競賽
VOTE for your favorite teams and get a chance to
WIN a 65-inch TECO TV!!
We welcome you to join this tremendous
contest and see how to reach net-zero emissions.
TIME: 8/19/2025, 10:00-15:00
VENUE: National Taiwan University Sports Center
(1F, No. 29, Section 2, Xinhai Road, Daan District, Taipei City)
國立臺灣大學
National Taiwan University
財團法人東元科技文教基金會
TECO Technology Foundation

人氣獎投票與摸彩

Net Zero Tech | International Contest @ Taiwan
2025淨零排放科技國際競賽

進場觀賽

投下最佳人氣獎選票

即可獲得 **東元65吋大電視** 的摸彩機會

竭誠歡迎親臨現場

見證「2050淨零排放」的活水源頭

時間：2025年8月19日(二) 10：00-15：00

地點：國立臺灣大學綜合體育館 (臺北市大安區辛亥路二段 29 號)

國立臺灣大學 National Taiwan University

財團法人東元科技文教基金會 TECO Technology Foundation

Information for Foreign Finalist Teams

1. All finalist teams must attend the final competition in Taiwan. The attending members must include at least 2 students and 1 advisor.

2. Teams that attend the final competition will receive the following financial support:
   (1) Travel subsidy of approximately USD 1,600.
   (2) A minimum of approximately USD 1,600 in prize money..

3. The organizing committee provides the following services:
   (1) Consultation on accommodation, meals, and transportation.
   (2) Full insurance coverage throughout the event.
   (3) Arranged visits to Taiwan’s leading net-zero technology institutions or enterprises.

國外入圍團隊參賽資訊

一、凡入圍必須來台出席決賽(出席學生必須是2人與指導教授1人以上)

二、凡出席決賽之團隊,可以獲得的獎金與旅費

(一) 旅費補助約美金1,600元

(二) 獎項最低獎金約美金1,600元

三、大會提供服務項目：

(一) 食宿交通的諮詢

(二) 提供場佈及決賽當日、參訪活動兩日旅遊平安險

(三) 安排參訪台灣淨零科技頂尖機構或企業

Subsidy Regulations for Foreign Finalist Teams

1. Subsidies to: The foreign teams that qualify for the finals of the "International Contest."
2. Subsidy Amount：approximately USD 1,600
3. Disbursement Method: Cash will be distributed on-site at the final round on Tuesday, August 19
4. Claiming Methods:

   Option A: Based on receipts / invoice in August, 2025

   (such as：flight documents, accommodation, meal invoices, etc.)

   Note：
   - Flight Documents including – Boarding Pass、Invoice Application & Certificate of Entry and Exit Date)
   - The flight time must be between 8/13 ~ 8/18

   Option B: Based on a receipt form (format will be provided by the organizer).

   Note:
   Those which is based on receipt forms, according to the Income Tax Act of the Republic of China, individuals with R.O.C. nationality are subject to a 10% tax (exempt for amounts under NT$20,000). Non-R.O.C. nationals are subject to a 20% tax.

國外入圍團隊旅費補助領取辦法

一、補助對象：「國際賽」入圍決選的國外團隊

二、補助金額：約美金1,600元

三、補助方式：8/19(二)於決賽現場以現金發放

四、請領方式：

A方案：憑八月份單據(如飛航文件/住宿/餐食發票等)請領

註1- 飛航文件包括： (1) 登機證 (2) 電子購票證明 (3) 出入境證明

註2- 飛航文件之航班時間必須為 8月13 ~ 18 日之間

B方案：憑領據請領(領據格式由主辦單位提供)

註：憑領據請領之費用，依中華民國所得稅法規定，非中華民國國籍人士課20%稅金

Field trip information for International Contest Finalist Teams

國際賽團隊 參訪行程參加辦法 International Team Notice of The Trip

Field Trip :

August 20 & 21, participate freely and full insurance will be provided.

Registration link for foreign finalist teams : https://forms.gle/ncumtEz1SNv9eUYZ9

參訪行程：

時間：8月20 & 21日

參加對象：參加「國際賽」的團隊師生

費用：免費參加（提供全程保險）

行程安排與介紹：https://teco.tecofound.org.tw/zh-tw/pages/42/319

報名辦法： https://forms.gle/ncumtEz1SNv9eUYZ9

International Contest Team Field Trip

https://teco.tecofound.org.tw/zh-tw/pages/42/319

Date	time	Itinerary
8/20 (WED)	08 : 15	Departure (Howard Civil Service International House)
	08 : 15-09 : 00	Depart for Lite-On Technology
	09 : 00-10 : 30	Visit Lite-On Technology
	10 : 30-11 : 00	Depart for HD Renewable Energy
	11 : 00-12 : 00	Visit HD Renewable Energy
	12 : 00-12 : 30	Depart for Restaurant
	12 : 30-14 : 00	Lunch
	14 : 00-14 : 30	Depart for Fagushan Nung Chan Monastery
	14 : 30-16 : 30	Visit Fagushan Nung Chan Monastery
	16 : 30-17 : 00	Depart for Tamsui - Golden Tulip FAB Hotel
	17 : 00-	Check-in at Golden Tulip FAB Hotel Free time for self exploration: • Tamsui Old Street • Tamsui Fisherman's Wharf • Cycling • CLOUD GATE Theatre • Starbucks Coffee, etc. *Dinner at your own expense
8/21 (THU)	08 : 30-10 : 00	Guided tour of FAB Green Village (Diamond-rated Green Building) / Introduction to Geothermal Energy
	10 : 00-10 : 30	Check-out/ Depart for Chi Po-lin Museum
	10 : 30-12 : 00	Visit Chi Po-lin Museum
	12 : 00-12 : 30	Depart for Northern Coast seafood restaurant
	12 : 30-14 : 00	Lunch
	14 : 00-15 : 30	Northeast Coast Scenic Drive / Depart for Yehliu Geopark
	15 : 30-17 : 00	Visit Yehliu Geopark
	17 : 00-19 : 00	Return to Howard Civil Service International House

國際賽團隊參訪行程

https://teco.tecofound.org.tw/zh-tw/pages/42/319

日期	時間	行　程
8/20 (三)	08：15	出發 (福華國際文教會館)
	08：15-09：00	前往光寶科技
	09：00-10：30	參訪光寶科技
	10：30-11：00	前往泓德能源
	11：00-12：00	參訪泓德能源
	12：00-12：30	前往餐廳
	12：30-14：00	國際交流餐會
	14：00-14：30	前往法鼓山農禪寺
	14：30-16：30	參觀法鼓山農禪寺
	16：30-17：00	前往淡水將捷金鬱金香酒店
	17：00-	Check-in 將捷金鬱金香酒店 淡水老街、淡水漁人碼頭、自行車、雲門舞集、星巴克咖啡...等自由行，晚餐自理
8/21 (四)	08：30-10：00	滬尾藝文休閒園區鑽石級綠建築導覽 / 地熱能源介紹
	10：00-10：30	Check-out/前往齊柏林空間
	10：30-12：00	參觀齊柏林空間
	12：00-12：30	前往北海岸的漁港餐廳
	12：30-14：00	午餐交流
	14：00-15：30	東北角海岸風光、前往野柳地質公園
	15：30-17：00	參觀野柳地質公園
	17：00-19：00	賦歸/返回福華國際文教會館

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