IEEE IFEC'25

2025 International Future Energy Challenge

Undergraduate Student Competition http://energychallenge.weebly.com

CALL FOR PROPOSALS

General Chair:
Yu-Chen (Steven) Liu, National Taipei University of Technology

General Co-Chair:
Cheng-Yu Tang, National Taipei University of Technology

Webmaster:
Tsu-Chieh Hsu, National Taipei University of Technology

Local arrangement Chair:
Ying-Ting Huang, National Taipei University of Technology

Local arrangement Co-Chair:
Katherine Kim, National Taiwan University

Publicity Chair:
Lakshmi Ravi, ABB

Treasurer/Finance Chair:
Ching-Jan Chen, National Taiwan University

Steering Committee Chair:
Jason Lai, Virginia Tech

Sponsored by:

■ IFEC Introduction

IFEC is an international undergraduate student competition in the design of power electronics systems, focusing on effective use of electrical energy and driving innovation. The competition is open to college and university student teams from recognized engineering programs worldwide.

■ Topic: Isolated DC-DC Converters with Fast Transient Response and Low Noise

Preliminary Specifications:

- Input Voltage: 400 Vdc
- Output Voltage: Programmable 20Vdc~150Vdc (Voltage accuracy: <0.5% @10 PLC aperture time)
- Output Current: 10Adc max at all output voltage
- Rated Output Power: 1.5kW@150V, 600W@60V, 200W@20V
- Transient Response of Load Change (0A ↔ 10A @ 20V, 60V, 150V. Typical rising/falling time of load current is about 20μs): Output voltage recovers within 100μs to ±200mV settling band.
- Step Response of Output Voltage:
- 20V→60V→150V: rising time<100us (No Load)
- 150V→60V→20V→Turn OFF: falling time<1ms (No Load)
- Load Regulation of Output Voltage: <0.1% @ 20V, 60V, 150V
- Ripple & Noise of Output Voltage: 200mVp-p/30mVrms @ 20V, 60V, 150V, (Full load, Set oscilloscope with 20MHz Measurement Bandwidth.)
- Conversion Efficiency (include all power consumptions to sustain the operation of power converters.): Output voltage=150V, >92% (@25% load), >96% (@50% load), >95% (@100% load)
- Power Density: > 1.6W/cm3

■ Final Competition Location

Chroma ATE Inc., Taoyuan City, Taiwan

■ Participation

Interested teams must submit a proposal to ifec2025@gmail.com before the proposal deadline. Each Proposal will be judged by a distinguished panel of volunteer experts in the field of power electronics. Schools with successful proposals will be notified of their qualification for the next stage of the competition. The deadline for each period will be posted on the IFEC website. The top teams will be invited to a competition event in the summer of 2025. There will be a Grand Prize of $10,000 and three additional awards granted at $5,000, $3000 and $1,000 each.

Important Notes:

✧ Each university can support only one team.
✧ Each team must have at least 4 members. Interdisciplinary teams are encouraged. Graduate students are not excluded from participation but must only provide high level support.

■ Deadlines and Proposal Submission Email Address

Workshop at ECCE 2024	Oct. 21, 2024
Proposal Deadline	Nov. 15, 2024
Please email the proposal to	ifec2025@gmail.com
Notification of Acceptance	Dec. 15, 2024
Workshop at APEC'2025	Mar. 16, 2025
Notification of Finalists	TBA
Final Competition	TBA

Website: http://energychallenge.weebly.com