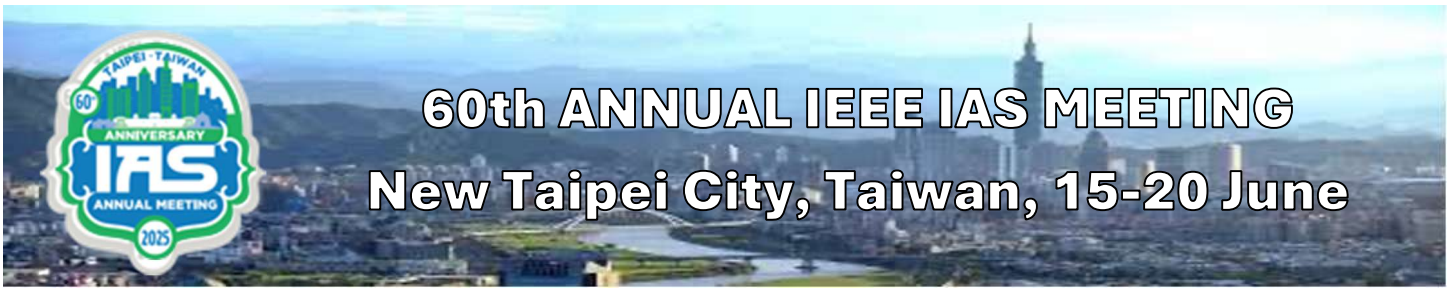

Special Panel Session on

Energy Efficiency and Power Supply Solutions in Modern Data Centers

Moderator, **Dr. Charles Tsai**, Delta Electronics, Taiwan (charles.tsai@deltaww.com)
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Moderator Short Bio

Dr. Charles (Wen-Yin) Tsai was born in 1963. He received the M.S. and Ph. D degrees in electrical engineering from National Cheng-Kung University in 1989 and 1995 respectively.

He is currently the general manager of Hydrogen Energy Business Division (HEBD) in Delta Electronics and the vice chairman of Taiwan Power Electronics Association (TaiPEA). He was the CTO of ICT business group of Delta Electronics. His major works are to develop technology and global business management in hydrogen and data center industry. These include solid cell fuel cell, solid oxide cell electrolyte, liquid cooling , power solution, renewable energy integration and micro grid system.

Speakers' Short Bios

Prof. Zhaohao Ding (Senior Member, IEEE) received the B.S. degree in electrical engineering and the B.A. degree in finance from Shandong University, Jinan, China, in 2010, and the Ph.D. degree in electrical engineering from the University of Texas at Arlington, Arlington, TX, USA, in 2015. He is currently a Professor with North China Electric Power University, Beijing, China. His research interests include power system planning and operation, power market, distributed resource management, and electric transportation system. He was the recipient of the IEEE IAS AWS Outstanding Young Member Achievement Award in 2022 and IEEE IAS Outstanding Young Member Service Award in 2020. He is an Editor of IEEE Transactions on Smart Grid and IEEE Transactions on Industry Applications.

Dr. Ming-shan Jeng is a Senior Principal Researcher at the Green Energy & Environment Research Laboratories in the Industrial Technology Research Institute (ITRI) in Taiwan. He earned his Ph.D. degree in 1992 from National Cheng-Kung University and has been with ITRI since 1993. In 2004, he was a visiting scholar at the Massachusetts Institute of Technology. With over 30 years of experience in energy research, his work spans building energy efficiency, LED lighting, HVAC systems, renewable energy, hydrogen energy, and thermoelectric materials. He has published over 100 articles and holds more than 30 patents in these fields. Currently, Dr. Jeng serves as the Deputy General Director of the Green Energy & Environment Research Laboratories at ITRI, where he oversees research projects in energy efficiency and sustainable environment.

Dr. Chun-Kai Liu is the Manager of the Smart Power Conversion System Development Department within the Compound Semiconductor and Power System Technology Group at the Institute of Electronic and Optoelectronic Systems, Industrial Technology Research Institute (ITRI). He earned his Master's degree from the Institute of Power Mechanical Engineering at National Tsing Hua University in Taiwan and his PhD from the Institute of Mechanical Engineering at National Taiwan University. In his current role, he is responsible for the system integration and application of wide bandgap power semiconductors, such as Silicon Carbide and Gallium Nitride. His work includes the development of motor drives, onboard chargers, and data center power supplies. Dr. Liu serves as the Secretary-General of the Taiwan Thermal Management Association. His expertise encompasses electronic cooling, power module packaging, and power conversion system integration.

Mr. Richard Chan holds a Master's degree in Electrical Engineering from National Cheng Kung University, graduating in 1996. Mr. Chan joined Delta Electronics in 2000, where he has built a strong foundation in power electronics, specializing in high-efficiency and high-reliability solutions. Since 2013, Mr. Chan has focused on the development of power solutions for data centers, playing a crucial role in advancing next-generation power architectures. In 2021, he was appointed as the Technical Director of CISBU, where he spearheaded innovative technology strategies and product development. In 2024, Mr. Chan took on the role of General Manager of DCSBU, overseeing the design and deployment of cutting-edge Data Center Power & Cooling infrastructure. With extensive experience in power electronics, Mr. Chan currently leads the planning and development of Data Center Power & Cooling infrastructure solutions, driving innovation in energy efficiency and sustainability.

Abstract of the Presentation:

The growing demand for data processing, storage, and cloud computing services has driven significant changes in the design and operation of data centers. As the backbone of the digital economy, data centers are responsible for an increasing portion of global energy consumption. This proposal seeks to bring together academic experts, industry engineers, and manufacture leaders to discuss the latest developments in data center energy management, power supply systems, energy savings techniques, and system integration for enhanced operational efficiency. The forum will focus on presenting practical solutions to the challenges data centers face in balancing operational demands with sustainability goals, particularly around power usage effectiveness (PUE), system integration, and emerging technologies.

Topics for Discussion:

- Data Center Energy Management: Best Practices and Challenges (by Prof. Zhaohao Ding, North China Electric Power University)
- Data Center Energy Savings: Energy efficiency and cooling system engineering (by Dr. Ming-shan Jeng, GEL, ITRI)
- Data Center Power Supply Systems: Wide bandgap power devices Application (by Dr. Chun-Kai, Liu, EOSL, ITRI)
- Data Center Power System Integration: Power solution and its Trend of AI Data center (by Mr. Richard Chan, Delta Electronics)