

Online Technical Talk: Next-generation Energy Technologies: A Role of Battery Energy Storage Systems (BESS) for Net Zero Carbon Concept

Synopsis

As the world races toward net-zero carbon, next-generation energy technologies must address the critical challenge of renewable energy intermittency. Battery Energy Storage Systems (BESS) emerge as a linchpin solution, enabling grids to harness solar and wind power reliably while phasing out fossil fuels.

This talk explores how BESS bridges the gap between variable renewable generation and 24/7 energy demand, from stabilizing grids to empowering decentralized microgrids. Highlighting innovations in lithium-ion, solid-state, and hybrid storage systems, it underscores the technology's role in reducing curtailment, supporting EVs, and ensuring energy equity.

However, scaling BESS globally demands overcoming cost, mineral sustainability, and policy fragmentation. With the market poised to grow tenfold by 2030, collaboration among governments, industries, and innovators will determine whether BESS becomes the cornerstone of a carbon-neutral future. The path to net zero isn't just about generating clean energy—it's about storing it intelligently, and BESS holds the key.

About the Speaker

Assoc. Prof. Ts. Dr. Ramani Kannan is an Associate Professor at Universiti Teknologi PETRONAS (UTP), Malaysia, specializing in power electronics, renewable energy, battery management systems, and artificial intelligence.

With over 19 years of academic and research experience, he has published more than 250 peer-reviewed articles, books, and book chapters, achieving an H-index of 24 with over 2,600 citations. He has led multiple high-impact research projects with funding exceeding RM 3 million. Actively involved in international collaborations, professional affiliations, and editorial roles,

Ts. Dr. Ramani also mentors postgraduate students and contributes to academic program development and industry engagement.



The Institution of Engineers, Malaysia
(Penang Branch)



22 May 2025 (Thurs)



6.00pm – 8.00pm



BEM CPD Hours: 2

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Speaker:
**Assoc. Profs. Ts. Dr. Ramani
Kannan**



Moderator:
Ir Dr Huzein Fahmi bin Hawari

This Talk is organized by Electronic Engineering
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