

Plenary Talk By Prof. Kai Sang LOCK

Transforming Engineering Accreditation: Opportunities and Challenges to Educate Future-Ready Engineers under IEA GAPC Version 4

ABSTRACT

The International Engineering Alliance (IEA) Graduate Attributes and Professional Competencies (GAPC) Version 4 marks a pivotal evolution in global engineering education and accreditation. Beyond establishing outcome-based benchmarks, the revised framework emphasizes sustainability, ethical practice, digital transformation, and social responsibility as defining competencies of future-ready engineers. This presentation examines how engineering accreditation systems worldwide are adapting to GAPC V4—moving from compliance-driven models toward transformative quality enhancement.

While Graduate Attributes provide essential reference points, accreditation should not constrain innovation or local relevance in engineering curricula. Instead, Version 4 opens new opportunities to reimagine program design, assessment, and continuous improvement in ways that nurture creativity, interdisciplinarity, and global sustainability mindsets. Drawing from international examples and ongoing reform initiatives, this session explores both opportunities and implementation challenges—from aligning learning outcomes with sustainability imperatives to ensuring equitable recognition across jurisdictions. The presentation concludes with a forward-looking discussion on future directions for accreditation—toward an agile, adaptive, and globally coherent system that prepares engineers to lead in an uncertain, interconnected world.



Professor Kai Sang LOCK

Chair, Washington Accord
Professor & Head
Energy Efficiency Technology Centre,
Singapore Institute of Technology,
Emeritus President
Institution of Engineers, Singapore

Professor Lock is the Chair of the Washington Accord. He is a Professor (Engineering) at the Singapore Institute of Technology (SIT) and the Head of its Energy Efficiency Technology Centre. He is an Emeritus President and an Honorary Fellow of the Institution of Engineers Singapore (IES). He served as the Founding Chairman of the Engineering Accreditation Board, IES, from 2002 to 2009, leading IES to become a signatory of the Washington Accord in 2006. He is a registered Professional Engineer (Electrical) and served as a Board Member of the Professional Engineers Board, Singapore for 14 years. He is a Fellow of Academy of Engineering Singapore and a Senior Fellow of ASEAN Academy of Engineering and Technology.

He plays an active role in promoting sustainability and energy efficiency in Singapore, being the current Chairman of the Accreditation Committee for Energy Service Companies and the Co-Chair of the Singapore Certified Energy Managers Scheme. For his contribution and leadership in energy efficiency and sustainability, he was bestowed the Public Service Star in 2020 by the President of the Republic of Singapore.

He has a unique blend of practicing and academic experience acquired through a career which is equally split between the industry and the academia. He received both his B.Sc. (1975) and Ph.D. (1979) degrees in Electrical Engineering from the University of Strathclyde, UK. He was a faculty at the Department of Electrical Engineering, National University of Singapore for 17 years when he left to set up his consulting practice in 1997. He returned to the academia as a professor at SIT in 2016 after 20 years in the industry.

He is the co-Laureate of the 2021 WFEO Medal for Excellence in Engineering Education awarded by the World Federation of Engineering Organisations.