

# THE CIVIL ENGINEERING HANDBOOK

**SECOND EDITION**

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<http://www.eng.nus.edu.sg/cee/people/ceeljy/>

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[https://www.researchgate.net/profile/Jat\\_Yuen\\_Richard\\_Liew](https://www.researchgate.net/profile/Jat_Yuen_Richard_Liew)

<http://www.ctbuh.org/CongressCommittees/RegionalSteering/RichardLiew/tabid/2930/language/en-US/Default.aspx>

<https://sg.linkedin.com/in/richard-liew-3067ab40>

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### **Biography:**

Jat-Yuen Richard Liew, PhD, PEng, CEng, ACPE, FSEng, is Professor of the Department of Civil and Environmental Engineering, National University of Singapore. He is a Professional Engineer in Singapore, a

Chartered Engineer in U.K, a Chartered Professional Engineer of the Association of Southeast Asian Nations, and Past President of the Singapore Structural Steel Society and a fellow of academy of Engineering Singapore. He received his B.Eng (First Class) and MEng from the National University of Singapore and PhD from Purdue University where his research on advanced analysis for frame design has influenced recent steel structural design codes and specifications. Dr Liew's main research focus is on steel and composite materials and structures with applications to high rise and large span structural systems covering defence, offshore, and building sectors. His research has garnered more than 2669 cites (h-index 30) in Google scholar.

Dr Liew serves in the editorial board of the 10 journals. He has authored and co-authored more than 400 scientific papers, including 5 books, 13 edited books and 15 book chapters. He has delivered about 50 keynote and invited lectures in 22 cities around the world in topics related to design and construction of steel structures. He received numerous teaching awards and was placed in the Teaching Honour Roll in 2008.

Dr Liew was appointed as a honorary professor and the Academy of Engineer of the Nanjing Tech University, China in April 2015. He was conferred the "Honorary Fellow" by the Singapore Structural Steel Society in 2010 and by the Hong Kong Institute of Steel Construction in 2011 because of his leadership roles in structural steel professional and business communities in Singapore and Hong Kong. He was one of the code writers and international advisors for the Hong Kong's structural steel codes. He is the key person responsible for developing the Singapore national annexes for Eurocodes 3 and 4, the latest codes of practice for design steel and composite structures in Singapore. He is a member of the Singapore Specification committee on steel building products, advisory committee on the Hong Kong Code of Practice of Steel Structures, IABSE Working Commission 2 on Steel, Timber and Composite Structures, technical committee for Singapore performance based fire engineering design, Member of IStructE, Fire Engineering Task Group, London, and International Structural Steel Research Advisors (ISSRA) of the American Institute of Steel Construction. He chairs numerous international and national conferences, workshops and seminars including committees related to standards and specifications of steel and composite structures. He was invited as an honourable judge to select entries for structural excellent awards by the Hong Kong Institute of Engineers, Singapore Structural Steel Society and Singapore Building Construction Authority.

He has secured more than 15 million external grants to fund his research work. His work on metal-cementitious composite structures has made deep impact to the development of tall buildings, offshore systems and protective structures. The efforts of his work focus on the investigation into and development of sustainable metal-composite materials and technologies including ultra-lightweight and high strength composite structural systems subjected to extreme loads. These investigations have ranged from technologies for prefabrication production of composite and hybrid structures for high-rise and large span systems at one extreme to design for fire hazards, impact and blast loadings for structures in offshore and defence related industries at the other end of the spectrum. He provides technical advice to steelwork contractors, consultants and the wider construction industry on a broad range of topics including design and construction of large span structures and tall buildings. Arising from his research work, he has filed several patents including 3-in-1 scaffold coupler, deployable cable-strut system, J-hook shear connector for sandwich construction and water tank energy façade system. His research team has developed an ultra-lightweight floating concrete that have a structural compressive strength of more than 50MPa. This is a major breakthrough in research in cementitious composite materials for offshore and marine application. The research team also made another breakthrough in the development of ultra high strength concrete of 200MPa compressive strength which can be used for high rise construction.

Dr. Liew represents the Singapore's constructional steel industry and engineering professions on a number of national and government committees. He is an independent director of two public listed companies serving as a member of the audit committee and chairman of the nomination and remuneration committees. He interacts closely with the industry in the Asia Pacific region serving as an expert and technical advisor and has been involved in numerous iconic steel projects. Some of the recent award winning projects that he has involved

include One Raffles place, Flower Dome and Cloud Forrest Biome at Gardens by the Bay. He has seen his R&D outcome brought from the laboratory to full-scale applications. The latter would include the deployable cable-strut systems (IP Patents), performance-based fire engineering method (guides for performance-based fire safety design). His designs have been applied in some 20 full-scale installations for airport structures, high-rise buildings, large-span structures and special cool-thermal wall for clean tech building.

He has nurtured a team of research fellows and research engineers who can act as co-investigators to conduct research on multi-disciplinary themes. He has wide contact with industry leaders and able to attract external funding to continue to fund his research group in view of robust growth in offshore oil and gas industry and construction industry. His recent projects with Ministry of Home Affairs, Yongnam Engineering and Construction and Jurong Town Corporation on energy storage water facade system is another innovative project that combines energy sustainability and protective technology for practical application in response to the need of building owners and developers.

**Selected Publications** (see the links listed above)