

## PRE AGM TALK ON

### “ULTRA-HIGH PERFORMANCE FIBER REINFORCED CONCRETE (UHPFRC): TECHNOLOGY FOR THE PRESENT AND FUTURE”

Organized by the Civil and Structural Engineering Technical Division (CSETD)  
BEM Approved CPD/PDP: 2 Hours Ref.: IEM18/HQ/227/T

Date : **14 JULY 2018 (Saturday)**  
Time : **09.00 – 11.00 a.m.**  
Venue : **Auditorium Tan Sri Prof. Chin Fung Kee, 3<sup>rd</sup> Floor Wisma IEM, Petaling Jaya, Selangor**  
Speaker : **Ir. Adjunct A/Prof. Dr. VOO YEN LEI**

#### SYNOPSIS

Ultra-high-performance fiber reinforced concrete (UHPFRC) is an advanced cementitious-based composite material that offers new opportunities for infrastructure works, building construction and various niche markets. In the last two decades, UHPFRC has been mostly used for both structural and non-structural precast components in many countries, such as Australia, Austria, Canada, China, Germany, Italy, Japan, Myanmar, Netherlands, New Zealand, Singapore, Slovenia, Spain, South Korea, Switzerland, United States, Vietnam and many others. Some of the common applications include: (i) pedestrian and vehicular bridges; (ii) building components such as beams, columns, facades, precast bathroom units, staircases and others; (iii) marine structures; (iv) rehabilitation-and-strengthening solution for deteriorated members; (iv) nuclear plant facilities where enhanced durability and radiation shielding properties are needed; (v) blast or impact protective structures; and many others.



However, this technology has struggled to become a main-stream technology due to lack of design codes and its initial high investment cost of the manufacturing facility. Moreover,



high UHPFRC material cost makes it even harder to compete with conventional designs. Most projects in these countries have been motivated by government agencies as demonstration projects intended to encourage

further implementation. However, for most of the countries, the follow-up implementation has been slow. Both private and governmental bodies are increasing their directive order for the attention and initiative towards exploiting UHPFRC as the future concrete construction material, with the belief that UHPFRC technology embraces the complete solution for sustainable construction with favorable life cycle value.

This talk will briefly present the typical mechanical properties of UHPFRC and the method to produce such high strength materials. Various examples on the application of UHPFRC will be demonstrated during this presentation. The examples given will be focused in those past successful projects worldwide and other potential applications of UHPFRC technology that are yet to be discovered. At the end of the presentation, participants should be aware of how UHPFRC came into the construction industry as a futuristic material and applications ideas or solutions to current engineering matters should be sparked by the case studies reference presented

#### ANNOUNCEMENT O NOTE

##### FEES

(Effective 1<sup>st</sup> October 2017)

##### Members

Registration Fee : No Charge  
Administrative Fee :  
**Online** RM15  
**Walk In** RM20

##### Non-Members

Registration Fee :  
RM50  
Administrative Fee :  
RM20

- Limited seats are available on a "first come first served" basis (maximum 100 participants).
- **To secure your seat, kindly register online at [www.myiem.org.my](http://www.myiem.org.my)**

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## **SPEAKER'S BIODATA**

**Ir. A/Prof. Dr. Voo Yen Lei**, is the CEO and Founder of Dura Technology Sdn. Bhd. In 1997, he was offered a place in the University of New South Wales (UNSW) Sydney, Australia where he gained his Bachelor in Engineering (Civil) with First Class Honors in 2000. Upon graduating, he was being immediately offered a full scholarship by the same university for his noteworthy achievements to complete his PhD. in Civil Engineering. He then stayed on in UNSW for another three years to complete his PhD. This is when he was introduced to Ultra-High-Performance Fiber Reinforced Concrete (UHPFRC), a cutting-edge concrete formula that embraces the quality of both concrete and steel, which make it so durable, flexible and sustainable. He founded Dura Technology Sdn. Bhd. based on his interest and knowledge in UHPFRC and his passion to create a more sustainable and environment friendly development. He saw the shortcomings of the existing bridge construction systems and was convinced that UHPFRC can fill in the gaps. Dura Technology Sdn. Bhd. was built and operated under his supervision since 2006. Dr. Voo reformulated UHPFRC according to the local context and needs and branding it for commercialization. During this 16 years course, he often



travels to educate related industries and governmental sectors about UHPFRC. He has also patented his UHPFRC, had come out with bridge designs ideally for UHPFRC and to encounter specific construction glitch. To-date Dura Company has supplied or constructed 100 over UHPFRC bridges in Malaysia, and has also transferred the technology to China, India and Canada.

Dr. Voo is also an Adjunct Associate Professor with the University of New South Wales (UNSW), Australia. Being an avid believer in academic, he believes a good and strong foundation in education will bring the people and nation to a greater level of achievements. With four Malaysia Book of Records in hand, he is aiming for more marvels to be erected in Malaysia. Recently he also awarded the **2016 PCI Design Award Winner**: Best International Transportation Structure on Construction of the 100m Single Span Batu 6 UHPFRC Bridge from the USA Precast/Prestressed Concrete Institution; and **the 2017 Best Project Award - Infrastructure Projects (Small Category)** from the Malaysia Construction Industry Excellence Award 2017.

**Ir. Dr. NG SOON CHING**

**Chairman**

**Civil and Structural Engineering Technical Division**