ONE DAY SEMINAR

SMART INFRASTRUCTURE ENGINEERING: PERFORMANCE-BASED AND ADAPTIVE DESIGN

21ST APRIL (TUESDAY)

CONNEXION, BANGSAR

APPLYING

BEM Approved CPD: 7
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PEB'S PDU : APPLYING

PROF KENICHI SOGA
Distinguished Professor
UC Berkeley

Ir. DR LEE SIENG KAI
Managing Director
Glostrext Berhad

DR TEE BUN PIN
Founder & General Manager
Smart Sensing Technology

SEMINAR DETAILS

This Seminar on Smart Infrastructure Engineering: Performance-based and adaptive design will highlight how innovation and digitalisation are redefining geotechnical practice. Participants will gain insights into the use of distributed sensing and data analytics for performance-based design and maintenance, cutting-edge developments in pile instrumentation and automated maintained load testing, and the implementation of real-time monitoring systems that are transforming the management of foundations and slopes in Malaysia.

REGISTER NOW !

: 03-7890 0133 / 0134 / 0135
: sitiaisyah@iem.org.my
: www.myiem.org.my

PROF KENICHI SOGA

Kenichi Soga is the Donald H. McLaughlin Professor in Mineral Engineering and a Distinguished Professor of Civil and Environmental Engineering at UC Berkeley. Prof. Soga is also the Director of the Berkeley Center for Smart Infrastructure, a faculty scientist at Lawrence Berkeley National Laboratory, and serves as a Special Advisor to the Dean of the College of Engineering for Resilient and Sustainable Systems. Prof. Soga's research focuses on infrastructure sensing, performance-based design and maintenance of infrastructure, energy geotechnics, and geomechanics from micro to macro. He has published more than 500 journal and conference papers and is the co-author of "Fundamentals of Soil Behavior" with Professors James K Mitchell and Catherine O'Sullivan. He is a member of the National Academy of Engineering, a fellow of the UK Royal Academy of Engineering, the Institution of Civil Engineers (ICE), the American Society of Civil Engineers (ASCE), and the Engineering Academy of Japan.

Topic 1: Reprise of 63rd Rankine Lecture: From Geo-monitor to Geo-adapt: leveraging distributed sensing and data analytics for performance-based design, construction, and maintenance

Geotechnical infrastructure safety is typically managed by assessing failure probabilities from past experience and reliability analyses. Emerging sensing, communication, and computing now allow continuous, economical monitoring during construction and operation—enabling (a) timely response if failure initiates, (b) adaptation to future unknown demands, and (c) feedback to improve future design, construction, and operation. The lecture illustrates these ideas with three case studies—tunnels, pipelines, and deep foundations—showing how distributed sensing and data analytics yield actionable geotechnical insights for adaptive, performance-based practice.

Topic 2: Large Deformation Landslide Modelling for Monitoring and Catastrophic Failure Prevention

Catastrophic landslides and embankment failures demand tools that can capture not only when failure initiates but how it propagates and runs out. This talk introduces recent advances in physics-based simulation and monitoring for large-deformation slope processes, highlighting the Material Point Method (MPM) as a practical framework to bridge initiation and post-failure behavior under coupled soil–fluid conditions. It will highlight a roadmap for integrating high-rate monitoring (pore pressures, deformation, remote sensing) with MPM-based scenario modeling to inform early-warning thresholds, emergency drawdown decisions, and resilient design of slopes and earth structures.

Ir. DR LEE SIENG KAI

Ir. Dr. Lee Sieng Kai has more than 30 years of experience in the field of piling, structural and geotechnical related services, covering instrumentation and testing technologies for construction projects as well as completed buildings and infrastructure. His expertise can be categorised into 2 segments, as follows:
(i) Pile instrumentation and static load test services; and
(ii) Ground and structural instrumentation and monitoring services.

He obtained his Bachelor's Degree in Civil Engineering from University of Malaya in 1990, and was conferred the degree of Doctor of Philosophy (PhD) in Foundation Engineering in 2011 by the same University. His research has been awarded with three gold medals in the national and international innovation competitions. He is a Professional Engineer registered with Board of Engineers, Malaysia and a Corporate Member of the Institute of Engineers, Malaysia. He is presently the Managing Director of Glostrext Berhad, listed on ACE market of Bursa Malaysia. He is responsible for overall day-to-day management and formulation of Glostrext Group's business plans and strategies as well as overseeing the overall operations of the Group.

Recent Advancement in Pile Instrumentation Methods and automated Maintained Load Test (aMLT) System

The practise of incorporating instrumentation for load test on preliminary test pile to measure the transfer of load from the pile shaft and toe to the surrounding soil has become a standard practice in piling projects in this region, a trend that has persisted even after the migration from the British Standards to the Eurocode for foundation design. The distribution of applied axial load can be accurately assessed by measuring strain changes at various cross-sections of the pile at different depths, as outlined in BS EN ISO 22477-1 (2018). This can be accomplished using built-in or removable extensometers, or strain-measuring devices attached to the reinforcement or embedded within the concrete of the piles. A notable advancement in this area is the GloStrExt technology, which enhances the quality of instrumentation data significantly. Moreover, the recent initiatives aimed at automating load control in piling projects have greatly accelerated the development of automated Maintained Load Test (aMLT) real-time monitoring systems. The ongoing R&D and growing adoption of aMLT systems are crucial for improving the standards and transparency of pile load testing in the industry.

DR TEE BUN PIN

Dr. Tee Bun Pin is an experienced civil engineer with a specialization in structural and geotechnical engineering. He holds a PhD, M.Eng, and B.Eng from Universiti Teknologi Malaysia. With over 20 years of combined experience in consultancy and construction, he has worked on the design and execution of numerous high-rise and infrastructure projects throughout Malaysia. Since 2012, Dr. Tee has focused on advancing and applying Fibre Optic Sensing Technology in civil engineering, with successful implementations across Malaysia, Singapore, Indonesia, Saudi Arabia, Kazakhstan, Australia, Cambodia and other countries. He is the founder and General Manager of Smart Sensing Technology Sdn Bhd (SST), established in 2015, which provides advanced testing and monitoring services using Distributed Fibre Optic Sensing (DFOS) and conventional instrumentation. Under his leadership, SST has been involved in landmark projects including MRT2, LRT3, Merdeka 118, Exchange 106, Changi Airport runway expansion, Penang Second Bridge, LRT Penang, ECRL and NEOM. Dr. Tee is also an active researcher and has published extensively on topics related to pile testing, structural integrity, and underground monitoring using smart sensing technologies.

Transforming Infrastructure Monitoring in Malaysia: Real-Time Monitoring for Foundations and Slopes

Infrastructure is increasingly exposed to complex geotechnical and structural challenges, driven by urban growth, climate variability, and aging assets. In this context, smart sensing technologies offer a transformative solution for real-time, high-resolution monitoring and early risk detection. This presentation by Dr. Tee Bun Pin highlights how advanced systems such as Distributed Fibre Optic Sensing (DFOS), Fiber Bragg Grating (FBG), and wireless monitoring are being deployed across critical infrastructure especially in Malaysia. Drawing on case studies from high-rise foundations, and landslide-prone slopes, the talk showcases how these technologies are used to track strain, deformation, temperature, vibration, and ground movement with unparalleled accuracy and continuity. It also introduces integrated monitoring platforms with robotic inclinometers, digital liquid level settlement gauge, and wireless sensors, providing centralized data visualization, anomaly detection, and predictive analytics. These innovations enable engineers to respond proactively to structural and geotechnical issues, reducing the risk of failure and improving asset lifecycle management. By comparing traditional and modern monitoring approaches, the presentation emphasizes the growing importance of data-driven decision-making in ensuring infrastructure safety, resilience, and sustainability. Attendees will gain insights into leveraging intelligent sensing technologies to build smarter, safer civil infrastructure.

PROGRAMME

8.30 - 8.50am	**Registration & Light Refreshment**
8.50 - 9.00am	Welcome Address
9.00 - 11.00am	Session 1: Reprise of 63rd Rankine Lecture: From Geo-monitor to Geo-adapt: leveraging distributed sensing and data analytics for performance-based design, construction, and maintenance - *Prof Kenichi Soga*
11.00- 11.30am	**TEA BREAK**
11.30 - 12.50pm	Session 2: Large Deformation Landslide Modelling for Monitoring and Catastrophic Failure Prevention - *Prof Kenichi Soga*
12.50 - 1.00pm	Q&A session
1.00 - 2.30pm	**LUNCH**
2.30 - 4.00pm	Session 3: Recent Advancement in Pile Instrumentation Methods and automated Maintained Load Test (aMLT) System - *Ir. Dr. Lee Sieng Kai*
4.00 - 4.30pm	**TEA BREAK**
4.30 - 5.45pm	Session 4: Transforming Infrastructure Monitoring in Malaysia: Real-Time Monitoring for Foundations and Slopes - *Dr Tee Bun Pin*
5.45 - 6.00pm	Q&A session
6.00pm	**CLOSURE**

REGISTRATION FEES

IEM M'SHIP GRADE	**FEE*** (Website Registration & Non-HRDC)	**FEE*** (Email registration & HRDC**)
IEM Member / HRDC for IEM Member (all grades except Student)	**RM350 / NA**	**RM400 / RM425**
Non-IEM Member / HRDC for Non-IEM Member	**RM750 / NA**	**RM400 / RM425**
IEM Student Member	**RM230**	**RM250**

***SST Excluded** ****HRDC Participants MUST register via email**

SAMPLE

Scan this QR code or Click HERE to register

REGISTRATION FORM: Seminar on Smart Infrastructure Engineering: Performance-based and adaptive design

No	Name	IEM M'ship No	NRIC No	Fee (RM)
			SUB TOTAL	
			Add SST @ 8%	
			TOTAL PAYABLE	

*Fees MUST be fully paid BEFORE the CLOSING DATE. Seats could only be confirmed upon payment. Enclosed herewith a crossed cheque No: _____ for the sum of RM _____ issued in favour of "The Institution of Engineers, Malaysia" and crossed 'A/C payee only' . I/We understand that the fee is not refundable if I/We withdraw after my/our application is accepted by the Organising Committee as stated in the cancellation term. If I/We fail to attend the seminar, the paid registration fee will not be refunded.

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CANCELLATION POLICY

IEM reserves the right to postpone, reschedule, allocate or cancel the event. Full refund if cancellation is received in writing more than 7 days before start date of the event. No cancellation will be accepted prior to the date of the event. However, replacement or substitute may be made at any time with prior notification and substitute will be charged according to membership status.

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