

Training Mode:
Physical



Approved Duration:
26/12/24 - 29/12/25

HRD Corp Serial No:
10001503530

HYBRID HALF DAY SEMINAR ON “INNOVATION IN INSTRUMENTATION AND MONITORING FOR TUNNELLING WORKS”

22ND JANUARY 2025 (WEDNESDAY)

8.30AM - 1.30PM

HYBRID (PHYSICAL + ONLINE EVENT)
PHYSICAL VENUE - MALAKOFF AUDITORIUM,
BEM APPROVED CPD: 4.0
REF NO : IEM25/HQ/009/S (H)

CLOSING DATE: 15 JAN 2025

PROGRAMME

TIME	PROGRAMME
08:30am – 09:00am	Registration of Participants, Welcome Breakfast at D’Place, Ground Floor, Wisma IEM
09:00am – 09:05am	Welcoming Address and Introduction by IEM TUSTD Representative
09:05am – 10:35am	Part 1: Technical Talk on “ INNOVATION IN TUNNEL MONITORING: INSIGHT TO ADVANCED TECHNOLOGIES ” Speaker: Dr. Henry Tan, Technical Director Geonamics (S) Pte. Ltd.
10.35am - 11.05am	Q&A Session
11:05am– 11.15am	Morning Coffee Break
11:15am– 12:45pm	Part 2: Technical Talk on “ ENHANCING TUNNEL SAFETY WITH DISTRIBUTED FIBRE OPTIC SENSOR, REAL-TIME WIRELESS SENSOR AND DIGITAL IMAGER DEFORMATION MONITORING SYSTEM ” Speaker: Dr. Tee Bun Pin, General Manager Smart Sensing Technology Sdn Bhd
12.45pm - 1.15 pm	Q&A Session
1.15pm - 1.20pm	Closing Remarks by IEM TUSTD Representative
1.20pm - 1.30pm	Lunch / End of Programme

“IEM reserves the right to alter or cancel the programme due to unforeseen circumstances at its discretion”.
IEM SHALL NOT be responsible for any direct or consequential losses”.

For further details, kindly contact:
The Institution of Engineers, Malaysia
Bangunan Ingenieur, Lots 60/62, Jalan 52/4, P.O. Box 223 (Jalan Sultan), 46720 Petaling Jaya, Selangor
Tel: 603-7890 0143

Email : shahrul@iem.org.my / syafiq@iem.org.my

Part 1: Technical Talk on "Innovations in Tunnel Monitoring: Insights to Advanced Technologies"

Tunnel monitoring has advanced significantly with the emergence of cutting-edge technologies, each offering unique advantages and addressing specific challenges. This technical talk provides a comparative overview of three prominent methods: Total Stations, Shape Acceleration Arrays (SAA), and Distributed Fibre Optic Sensing (DFOS), showcasing their respective strengths, limitations, and practical applications.

Total Stations are renowned for their high precision in angular and distance measurements, making them indispensable for assessing structural shifts with pinpoint accuracy. However, their reliance on line-of-sight observations and manual setup may pose challenges in complex or obstructed environments.

SAA systems, on the other hand, excel in tracking overall deformations and displacements of tunnel geometries. Their capability to provide continuous deformation profiles makes them suitable for monitoring large-scale structural movements. Yet, their resolution is limited compared to localized strain measurements, and their deployment may require careful alignment to capture critical data effectively.

DFOS introduces a novel approach by monitoring distributed strain and temperature along structural elements. This technology offers unparalleled insights into localized changes, making it ideal for identifying stress points or thermal variations. Despite its advantages, DFOS can be more expensive to install and maintain, and its effectiveness heavily depends on the quality of the optical cable installation and the type of interrogator.

Through real-world examples and recent project case studies, this session will highlight how understanding the pros and cons of these methods enables engineers to select the most appropriate technology for specific tunnel monitoring needs. Join us to gain valuable insights into tailoring monitoring solutions for modern infrastructure challenges.



Speaker : Dr. Henry Tan

Dr Henry Tan is currently the Technical Director for Geonamics (S) Pte. Ltd. He has been involved in various instrumentation projects, especially in land reclamation and tunnelling related projects since year 2005. Dr Tan continuously embarks on research projects that are related to ground improvement, and geotechnical instrumentations. Besides instrumentation, he is also involved in other research, such as geothermal deep slimhole drilling works, soil sintering, robotic integrated total system (RITS) and geotextile materials testing.



Part 2: Technical Talk on “Enhancing Tunnel Safety with Distributed Fibre Optic Sensor, Real-time wireless sensor and Digital Imager Deformation Monitoring System”

Instrumentation plays a vital role in ensuring the safety and structural integrity of tunnels, particularly when addressing challenges posed by unstable geological conditions such as loose rock fragments, fault zones, shear zones, karst formations, and cavities. These geological hazards can lead to deformation, partial collapses, or structural damage, jeopardizing the tunnel’s functionality and safety. Effective monitoring is essential not only during construction but also throughout the tunnel’s operational lifespan.

Advanced instrumentation systems provide real-time data, enabling engineers to detect, analyze, and mitigate potential issues before they develop into critical failures. Modern tunnel monitoring leverages a combination of technologies to measure parameters such as displacement, strain, pressure, temperature, and water ingress. The integration of these systems ensures comprehensive and precise monitoring, reduces risks, and supports informed decision-making.

The integration of advanced instrumentation technologies such as Distributed Fibre Optic Sensors (DFOS), remote wireless sensors, and digital imager deformation monitoring systems, have become essential in modern tunnel engineering. These systems enhance the ability to monitor and respond effectively to geological challenges, safeguarding tunnels during both construction and long-term operation. This seminar will explore the application of DFOS, remote wireless sensors, and digital imager deformation monitoring systems in tunnel monitoring. Their capabilities, advantages, and limitations will be discussed.

Speaker: Dr. Tee Bun Pin



Dr. Tee Bun Pin is a civil engineer with extensive experience in both academia and industry. He earned his PhD in Civil Engineering from Universiti Teknologi Malaysia. Dr. Tee has over six years of experience as a consulting engineer in high-rise building and infrastructure design, and five years of experience as infrastructure and building contractor.

Since 2012, Dr. Tee has focused in the research and application of Fibre Optic Sensing Technology, successfully implementing this technology in various civil engineering projects across Malaysia, Indonesia, Singapore, Cambodia and Kazakhstan. His work has been widely published, with numerous papers presented at international conferences and journals, focusing on topics such as structural assessment, pile load testing, and underground structure monitoring using Fibre Optic Sensing system.

As the founder and General Manager of Smart Sensing Technology Sdn Bhd (SST), established in 2015, Dr. Tee leads the company in providing advanced foundation testing, geotechnical instrumentation, and structural health monitoring services using Fibre Optic Sensing system and other innovative and conventional instrumentation. SST has played a important role in projects such as MRT2, LRT3, Merdeka 118, and Exchange 106 @ TRX, Changi Airport, Penang Second Bridge, TNB Penang monopole transmission tower, ECRL, SUKE among others.

Dr. Tee is also an experienced speaker, having conducted seminars and workshops on Fibre Optic Sensing Technology and pile testing at various institutions and conferences in Malaysia, Singapore, Indonesia and Kazakhstan. His expertise covers a broad range of applications, including varies type of shallow and deep foundation testing, bridge monitoring, building monitoring and tunnel deformation monitoring.

Moderator 1



Ir. FRANKIE CHEAH PENG LEONG

Frankie is a registered Professional Engineer in Malaysia and an ASEAN Chartered Professional Engineer. He has closed to 20 years' experience in large scale mass transit, railway design and construction projects in Singapore, Malaysia and across Asia region. His areas of expertise include deep foundations and underground earth retaining structures for both top-down and bottom-up construction in Malaysia and Singapore, involving the impact and interaction with existing development/infrastructure inside the central business district. Existing infrastructure consists of an existing rail structure, a substantial building with a basement, an underground structure, and an existing rail tunnel. Core experiences in consultancy for various project around Asia region, Frankie able to gain vast skill to produce a competent geotechnical element design that incorporate safety and economic aspect. He also promotes to enhance his skill and knowledge in technical writeup on his completed projects. He was the key geotechnical engineer for AECOM for both the Klang Valley MRT–Sungai Buloh–Kajang Line (Line2) and Klang Valley MRT–Sungai Buloh–Kajang Line (Line1). More recent projects that he provided geotechnical technical support included the detailed design of the Rapid Transit System (RTS) Link, and the KVMRT Line 3 tender preparation together with few other designs and built contract support with Asia region. He is also actively involved in promoting tunnelling and underground space with IEM as Deputy Chair of The Tunnelling and Underground Space Technical Division (TUSTD) of the Institution of Engineers, Malaysia. He also actively involved in promoting International Tunnelling and Underground Space (ITA-AIES) event such as WTC 2020, 46th ITA general and Symposium of Young Tunnellers of Asia (SYTA)

Moderator 2



NEO BOON KHENG TTT/9304

FHe obtained his Bachelor of Engineering (Hons) in Civil Engineering and Master of Science in Engineering from Southern Illinois University USA

He is a fellow member of Institution of Engineers Malaysia and actively serving in Tunneling & Underground Space Technology Division and Oil & Gas Technical Division.

He has 34 years of working experiences in infrastructure projects and utility tunnel projects using trenchless technology. He was with the consultant firm engage in water and wastewater projects participating in catchment and feasibility studies, preliminary design and detail design of sewer network and centralize sewerage treatment plant projects for the Sewerage Services Department. Currently he is the technical Director of PDP UTEK [M] Sdn Bhd

REGISTRATION FORM

HYBRID HALF DAY SEMINAR ON "INNOVATION IN INSTRUMENTATION AND MONITORING FOR TUNNELLING WORKS"

22 Jan 2025 (Wednesday) **Closing Date : 15 Jan 2025**

Email : shahrul@iem.org.my / syafiq@iem.org.my

HYBRID Fees Platform

	ONLINE PARTICIPANTS FEE (NON HRDF Claimable) (Log-in for registration & payment: www.myiem.org.my/member/login.aspx)	PHYSICAL PARTICIPANTS FEE (NON - HRDF Claimable) (Log-in for registration & payment: www.myiem.org.my/member/login.aspx)	PHYSICAL PARTICIPANTS FEE (HRDF Claimable) (By Email : Payment by cash, credit card, Quotation & Invoice)
IEM Student Members	40.00	100.00	150.00
IEM Graduate Members	75.00	180.00	230.00
IEM Corporate Members	120.00	300.00	350.00
Non-IEM Members (Non of the Above)	240.00	500.00	550.00

NAME	MEMBERSHIP NO. / GRADE	FEES (RM)
		Sub Total:
		SST Added 8% :
		Total Amount Payable :

PAYMENT DETAILS :

Cash RM _____

Cheque no. _____ for the amount of RM _____ (non-refundable) .

FULL PAYMENT must be settled before commencement of the course, otherwise participants will not be allowed to enter the hall. If a place is reserved and the intended participant fails to attend the course, the fee is to be settled in full. If the participant failed to attend the course, the fee paid is non refundable. The Registration Fee includes lecture notes, refreshment and lunch.

For **ONLINE REGISTRATIONS**, please note that payment **MUST** be made **BEFORE the closing date**. If payment is not received within the stipulated time, the registration fee will be reverted to the normal registration fee.

Contact Person: _____ Designation: _____

Name of Organization: _____

Address : _____

Telephone No. : _____ (O) _____ (Fax No.)

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Signature & Stamp

Date

ADVERTISEMENT BOOKING FORM (EVENT BOOKLET)

HYBRID HALF DAY SEMINAR ON “INNOVATION IN INSTRUMENTATION AND MONITORING FOR TUNNELLING WORKS”

22 January 2024 (Wednesday)

Organised by : Tunneling and Underground Space Technical Division (TUSTD), The Institution of Engineers, Malaysia No. 60/62, Jalan 52/4, P.O. Box 223 (Jalan Sultan), 46720 Petaling Jaya, Selangor
Tel No. 03-78900135 /134 Email: shahrul@iem.org.my / syafiq@iem.org.my
Website : www.iem.org.my

Chairman, Tunneling and Underground Space Technical Division (TUSTD),

We would like to place an advertisement in the EVENT BOOKLET of the **HYBRID HALF DAY SEMINAR (22 Jan 2024)** as indicated below and attach herewith a cheque no. for the sum of RMmade payable to “THE INSTITUTION OF ENGINEERS, MALAYSIA” being our booking fees:-

PLEASE TICK (√) IN THE APPROPRIATE BOXES BELOW (ALL SUBJECT TO 8% SST):

Tick	Location	Advertisement Rates (RM)	Complimentary Participant Seat
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	Inside Front Page (Colour)	RM 4,500.00	2 Seats
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For special packages, kindly indicate items agreed as below:-			

****Advertisement Artwork must be accompanied with payment minimum 1 week before printing.***

PAYMENT INFORMATION:

- Account Name : THE INSTITUTION OF ENGINEERS, MALAYSIA**
- Account Number : 232-303-911-0**
- Bank Name : UNITED OVERSEAS BANK (UOB)**
- Bank Address : NO 2-6, JALAN TENGAH, 46200 PETALING JAYA, SELANGOR**
- Swift Code : UOVBYK1025**
- Email Address for Receiving Remittance Advise : finance@iem.org.my/shahrul@iem.org.my**

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