

# URBAN UNDERGROUND SPACE & TUNNELLING ASIA SUMMIT 2016

6 - 9 September 2016, Singapore

Book and pay by **13<sup>th</sup> May 2016**

and save up to **SGD 1,900!**

**Main Summit Dates:** 7 & 8 September 2016

**Workshops Date:** 6 & 9 September 2016

Asia's Leading Urban Underground Space & Tunnelling Summit will return this September in Singapore to discuss leading practices, innovative techniques and sustainable solutions for Design, Engineering & Construction of Underground Space and Tunnelling Projects!

## KEY SUMMITS HIGHLIGHTS

**1 Case Studies** Hear from **Qatar Rail, Cityringen Metro and MTR Corporation Limited** amongst other leading project owners/government authorities and engineers share their latest experiences in **Underground Space Construction & Tunnelling Construction**

**2 Full Scale Coverage & Networking** A unique event truly dedicated to all professionals in **Underground Space & Tunnelling industry**. Experience a diverse networking opportunity with over 100 like-minded industry professionals from government authorities, project owners, engineering contractors and design engineers in Asia

**3 Best Practices** **Qatar's Metro, Copenhagen's Metro, Barcelona's Metropolitan Railway, Hong Kong MTR and Canada's Vancouver Line amongst other project owners/government authorities** will share best practices in planning, designing, engineering and construction of urban underground space infrastructure and tunnelling projects

**4 Detailed Presentations** Gain insights from industry experts on how you can **overcome key tunnelling & underground construction challenges, effectively phase/plan your projects, manage your project costs, budgets & schedules for complex underground space and tunnelling projects**

**5 In-depth Workshops** Attend **4 Expert- Led Workshops** to grasp the nuts and bolts of **underground space construction and tunnelling**

## PLUS!!!

**4** separately bookable workshops on **6 & 9 September 2016**

### WORKSHOP A

Innovations and Practical Approaches in Underground Construction & Tunnelling in Urban Environment

### WORKSHOP B

Identifying Best Practices in Rock Cavern Design and Rock Mechanics

### WORKSHOP C

Maximising Efficiency in Design and Construction of Tunnels and Cavities

### WORKSHOP D

Developing Effective Solutions for Underground Space Construction in Difficult Ground Conditions

Researched & Developed by

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**CEP CIVIL ENGINEERING PORTAL**

**IFMA Singapore Chapter**

**Tunnels**

**tunnelbuilder**

**Global Information, Inc.**

## 2016 SPEAKER FACULTY



**Dr.-Ing. Markus Demmler**  
Senior Director QIRP,  
**Qatar Rail**

- Overseeing 8 major D&B construction contracts comprising 230km of track, 114 km of twin tunnel, 94 stations, 116 km of elevated/at grade sections
- Involved in international tunnelling projects such as, Cologne North/South Stadtbahn, Munich U3-2, KASIG, Crossrail C300, C305, C310, SMART Project Kuala Lumpur



**Guy Taylor**  
Project Director,  
**Metroselskabet I/S Denmark**

- Managing the Metroselskabet program of Civil Works Contracts, including the Eur3.5b Copenhagen Cityringen Metro Project; Eur0.5b Nordhavn extension project, the Eur1b Sydhavn project and the L3 Light Rail Project
- Construction of the subsea immersed tube railway tunnel contract on the Citybanan Railway Project in Stockholm Sweden
- Involved in the design and construction of underground stations and tunnels on the North East Line (NEL) and Circle Line (CCL) mass transit rail projects
- Manage TBM tunnelling using open faced digger shields through London Blue Clay



**Dr. Paul James**  
Tunnel Director,  
**Eptisa**

- Involve in large road tunnel project at height in terms of underground tunnelling management, direct input into key aspects of the project timing/scheduling, management of project key engineers and assistant engineers
- Author of 19 books and 85 other publications in Project Management, ICT, Quality Management, and environmental impacts of construction



**Keith Kong**  
Technical Director,  
**Black & Veatch Hong Kong Ltd.**

- 20 years of diverse international experience predominantly in design, construction, site supervision
- Managed various major Civil, Highways, Mining, LNG, Slope Works, Railways and Tunnels projects in Australia, Dubai, Hong Kong, New Zealand, Phillipine, South Africa and Mainland China



**Lawrence TH Lee**  
Senior Construction Engineer - SCL-NSL,  
**MTR Corporation Limited**

- Over 20 years of experience in underground construction in Hong Kong
- Involved in Hong Kong's South Island Line, Lai Tung Tunnel, Nam Fung Tunnel and the new railway extension in Admiralty South Overrun tunnel of Shatin Central Line

*\*See Page 2 for more full speaker lineup*

## OTHER EXPERT SPEAKERS INCLUDE



**Simon Taylor**  
Head of Tunnelling,  
**Metroselskabet I/S Denmark**

- Managing ongoing tunnel construction on the Cityringen and Nordhavn Metro projects in Copenhagen.
- Involved in major infrastructure projects such as the Channel Tunnel, Storebælt Tunnel in Denmark, Airport Link in Sydney, Hallandsås Tunnel in Sweden, Doha Metro in Qatar and both Metro projects in Copenhagen



**Dr. Alun Thomas**  
Head of Department: Tunnels,  
**Ramboll**

- Involved in recent UK tunnelling projects such as the Jubilee Line Extension, Heathrow Express, Terminal 5 and Crossrail
- Written over 50 articles on subjects ranging from sustainability to user-friendly contracts Author of his own book, "Sprayed concrete lined tunnels"



**Prof John Endicott**  
Fellow,  
**AECOM**

- Designed and consulted for on more than 100 underground railway stations and associated tunnels, and for other underground projects including waste water treatment plant, data centre, warehousing and university campus renewal in caverns
- Worked on many road tunnels and water tunnels with experience in Cut and Cover Method, NATM, Drill and Blast, and TBMs



**Dr. Jay Lee, PhD, P.E.**  
Principal Geotechnical Consultant,  
**Advisian (WorleyParsons)**

- Professional engineer (geotechnical) with the Engineering Council of South Korea and Washington state of the U.S
- More than 20 years of experience in project management and the geotechnical, structural, contractual, and construction aspects of tunnels, caverns, deep excavations, foundations and slope stabilization projects



**Dr. Lee Fook Hou**  
Professor in the Department of Civil and  
Environmental Engineering,  
**National University of Singapore**

- Consulted more than 70 projects
- Reviewer for all of the top journals in geotechnical engineering
- Received the Top 12 Reviewers award from Computers and Geotechnics in 2009, 2013 and 2014
- PI of 7 external research grants totally roughly \$11million



**Rolando Justa Cámara**  
Tunnels and Marine Works Department Director,  
**Acciona Infraestructuras SA**

- Managed Barcelona's Metropolitan Railway and Valencia's Metro construction
- Involved in the Legacy Way project in Brisbane (Australia)
- Manager of construction works at sections 8 and 9 of the San Juan Inter City Train (Puerto Rico)
- D&C of Medellin Metropolitan Railway



**Dipl.-Ing. Erik Neun**  
Principal Engineer,  
**EDR GmbH**

- Over 17 years of experience in the design and design management of large, international underground infrastructure and tunnel projects.
- Has been responsible for the preparation of check engineering reports for the German Railway Authorities.
- Involved in a variety of landmark projects on 4 continents, ranging from deep excavations, cut and cover tunnelling, top down construction, caverns, conventional tunnelling to TBM tunnelling in soil and rock.

## FOUR KEY BENEFITS OF ATTENDING Urban Underground Space & Tunnelling Asia Summit 2016:



**Explore and witness** the latest innovative technologies and solutions in **planning and design engineering for underground excavation to lower project risks**



**Hear about** the **latest project updates and best practices** in underground space/tunnel construction from world's leaders across the globe



**Undercover** challenges faced in **planning, designing, engineering and construction of Urban Underground Space infrastructure and Tunnelling projects**, and how they can be overcome



**Find out the latest techniques** on overcoming **geo-technical, geo physical & ground movement challenges** associated with Underground Space Construction & Tunnelling Projects



**Dr. Manoj Verman**  
President,  
**ISRM Commission on Hard Rock Excavation**

- Involved in numerous projects ranging from rock slopes and buildings to bridges as well as metros in Singapore, Dubai, Delhi, Chennai and Mumbai.
- Published over 75 papers and is currently writing three books on "Hard Rock TBM", "Lessons Learnt from Tunnelling through Difficult Ground Conditions" and "Best Practice Guide for Tunnelling".



**Dr. Anmol Bedi**  
Managing Director,  
**Bedi Consulting**

- Involved in SCL tunnel design and construction for large and complex urban station
- Involved in Victoria Station Upgrade and the Crossrail SCL Stations and caverns contract
- Experienced in detailed design, verification and construction of various structures in large civil and mining infrastructure projects, internationally, in both soft ground and rock



**Nick Osborne**  
Project Director, APNA Practice Leader Geotech  
& Tunnels,  
**Mott MacDonald Singapore Pte. Ltd**

- Worked on the Jubilee Line and the Channel tunnel in the UK.
- 17 years' experience of SE Asia working on NELP, CCL, DTL, TEL, NS cable tunnel as well as metro projects in Bangkok, Kuala Lumpur, Jakarta and Australia
- Published over sixty papers Internationally and lectures regularly for TUCSS, BCA Academy and IES



**Kensuke Date**  
Chief Research Engineer,  
**Kajima Technical Research Institute Singapore  
(KaTRIS)**

- Has been engaged in various researches about bored/drill and blast tunnels, rock caverns, various TBMs, fill dams and waste disposal landfills.
- Provided technical consultancies for design of tunnel supports and reinforcement.
- Involved in Kitanomine Tunnel project, a big watertight tunnel project in Hokkaido, Japan.



**Paolo Prevedini**  
Project manager,  
**Metropolitana di Napoli spa**

- Actively involved in complex urbanism and cityscapes design projects including Naples's La Metropolitana dell'Arte
- Project management involving international committee of architects working for several station projects

## WORKSHOP A

9.00am – 12.00pm (include morning tea break)

### **Innovations and Practical Approaches in Underground Construction & Tunnelling in Urban Environment**

Deep excavations and tunnelling in urban environment imposed issues such as ground stability and the impact of the construction on the adjacent buildings or structures. Hence, it is essential for geotechnical and tunnelling industry to develop new technologies and new methods of construction to overcome these challenges future underground projects.

***After attending this workshop, attendees will be able to:***

- Implement ways to control noise from construction activities
- Outline different methods in site investigation, deep excavation and bored tunnelling
- Incorporate new innovations and practical approaches in underground excavation projects
- Understand the best practice in plan, design and construction of deep excavations and tunnelling

#### **About your workshop leader:**



**Dr. Jay Lee, PhD, P.E.**  
Principal Geotechnical Consultant,  
**Advisian (WorleyParsons)**

Dr Jay Lee has more than 20 years of experience in project management and the geotechnical, structural, contractual, and construction aspects of tunnels, caverns, deep excavations, foundations and slope stabilization projects. He is an expert in the design and construction of a wide range of soils and rock-related problems, ground improvement and remediation including advanced techniques, excavations and lateral supports, tunnelling and foundation design. Dr Lee is a registered professional engineer (geotechnical) with the Engineering Council of South Korea and Washington state of the U.S.



**Kensuke Date**  
Chief Research Engineer,  
**Kajima Technical Research  
Institute Singapore (KaTRIS)**

Mr. Kensuke Date is a chief research engineer of Kajima Technical Research Institute Singapore (KaTRIS), one of the overseas branches of KAJIMA Corporation in Japan. He has been engaged in various researches about bored/drill and blast tunnels, rock caverns, various TBMs, fill dams and waste disposal landfills. He has also provided technical consultancies for design of tunnel supports and reinforcement by means of in-situ tests, centrifuge modelling tests and numerical analyses. He graduated from the University of Tokyo with a Master's degree in earthquake engineering, and then joined KAJIMA in 1996. He collaborated with Prof R. Mair and Prof K. Soga on tunnel reinforcement studies, when he had enrolled in the Geotechnical and Geoenvironmental Group of the University of Cambridge from 2003 to 2005. He has worked as Resident Superintendent at various sites including the Kitanomine Tunnel project, a big watertight tunnel project in Hokkaido, Japan.

## WORKSHOP B

1.15pm - 4.15pm (including afternoon tea break)

### Identifying Best Practices in Rock Cavern Design and Rock Mechanics

Caverns are similar to tunnels in terms of engineering principles. The differences between the two are their physical dimensions and orientation, and the uses to which they are put. This workshop is to share good cavern engineering practice which mainly covers the geotechnical and civil engineering issues related to cavern design and provides appropriate guidance on producing cost-effective and safe designs. The topics covered in the workshop include discussion on the relationship between engineering geology and rock mechanics for cavern development, such as ground characterisations, insitu stress factors, rock parameters, rock joint effects, rockmass classifications, rock reinforcement design of caverns and cavern stability analysis.

#### ***After attending this workshop, attendees will be able to:***

- Explore new approaches in ground investigation and rock parameters
- Identify and eliminate In-situ stress considerations
- Outline the joints orientations and its effects
- Better understand rock mass classifications
- Develop effective solutions for rock support / rock reinforcement design
- Understand the importance of pillar stability analysis

#### **About your workshop leader:**



**Keith Kong**  
Technical Director,  
**Black & Veatch Hong Kong Ltd.**

Mr. Kong is a Registered Professional Engineer (Geotechnical) licenced in Hong Kong, Fellow Chartered Engineer of ICE and IoM3 and a UK Registered Ground Engineering Advisor (the highest grade of registration in UK) with acknowledged expertise in underground works, soil & rock mechanics and slope engineering.

He has 20 years of diverse international experience predominantly in design, construction, site supervision and project management of various major Civil, Highways, Mining, LNG, Slope Works, Railways and Tunnels projects in Australia, Dubai, Hong Kong, New Zealand, Phillipine, South Africa and Mainland China.



# SUMMIT DAY 1 - Wednesday, 7 September 2016

8.15am **Registration and Welcome Coffee**

8.40am **Welcome Address by Chairman**

8.50am **Overcoming Challenges in Designing and Construction of Tunnels in Mixed Ground Conditions**

- Managing challenges in bored tunnelling works in India
- Adaptation of good practices for bored tunnelling works, especially when tunnelling in close proximity to existing buildings
- Guidelines for optimal TBM excavation in mixed ground conditions
- Outlining key requirements of bored tunnelling works

**Dr. Manoj Verma**, President, **ISRM Commission on Hard Rock Excavation**

9.30am **Minimising Cost and Time Delay during Tunnelling Construction Caused by Unexpected Ground Conditions and Obstacles**

- Defining the role of CPT in TBM excavations and its vital importance as an effective technique
- Overcoming adverse geology along the tunnel alignment
- Cost effective and best methodologies use during ground investigations
- Best methodologies on site investigation works to identify the geotechnical parameters of the subsurface and groundwater

**Angelo Indelicato**, Engineering Geologist, **Dragages Hong Kong Ltd**

10.10am **Overcoming Groundwater Flow Issues during Excavations which cause instability in large Settlements, Damaging Surrounding Structures**

- Challenges posed by high ground water flows and the consequence to major urban infrastructure projects
- Developing measures to control ground water flow
- Developing and understanding the hydrogeological model
- Controlling groundwater for tunnel and shafts - Pre-excavation grouting and groundwater control

**Nick Osborne**, Project Director, APNA Practice Leader Geotech & Tunnels, **Mott MacDonald Singapore Pte. Ltd**

10.50am **Morning tea and networking break**

11.15am **Ground Improvement for Underground Construction in Soft Grounds**

- Brief introduction to underground construction and ground conditions in Singapore
- Strength of rock/soil and problems posed to underground construction
- Roles and functions of ground improvement for underground construction
- Methods of ground improvement and their relative strengths and advantages e.g. consolidation and surcharging, cement treatment, ground freezing
- Why is cement treatment so popular in Singapore?
- Typical schemes and process of ground improvement works covering site investigation, treatment, monitoring and quality control
- Enhance the current cement treatment schemes

**Dr. Lee Fook Hou**, Professor in the Department of Civil and Environmental Engineering, **National University of Singapore**

11.55am **Copenhagen's Cityringen Metro Case Study: Mitigating the impacts of mixed face conditions and contaminated ground**

- The challenges faced during tunnelling for the first time in Copenhagen's glacial deposits
- Outline of mitigation measures and experiences when tunnelling through the known contaminated areas along the alignment
- Dealing with unknown contaminated ground conditions and the approach to mitigating delays
- Summary of TBM tunnelling performance to date in the contaminated ground conditions

**Guy Taylor**, Project Director, **Metroselskabet I/S Denmark**  
**Simon Taylor**, Head of Tunnelling, **Metroselskabet I/S Denmark**

12.45pm **Lunch and networking break**

1.45pm **Managing and Mitigating Groundwater Infiltration Within the Underground Excavations in Rocks**

- Water inflow during the tunnelling works affecting both the construction area and the surroundings
- Examining the groundwater source
- Understanding how to measure water infiltration
- Exploring mitigation measures

**Kensuke Date**, Chief Research Engineer, **Kajima Technical Research Institute Singapore (KaTRIS)**

2.25pm **Managing Geotechnical and Construction Risks of Underground Excavations in Hong Kong**

- Examining the key geotechnical and construction risks faced based on recent Hong Kong and Singapore projects using Drill and Blast, and TBM Tunnelling techniques
- Practical implementation and development of risk management during the course of design and construction
- Comparing current project perspectives with past lessons learned
- Mitigate the impacts related to ground settlement and reduce risks associated with geotechnical hazards to an acceptable level

**Prof John Endicott**, Fellow, **Dragages Hong Kong Ltd**

3.05pm **Afternoon tea and networking break**

3.30pm **Barcelona's Metropolitan Railway Case Study: Best Practice in Construction of Complex Urban Tunnel**

- An overview of different methods used for Metropolitan Railway construction
- Underline the effective techniques and methods with collaboration of all the stakeholders
- Revealing the strategic approach to achieve successful in Construction of Complex Urban Tunnel
- Highlight the aspects of tunnelling in a densely populated urban environment

**Rolando Justa Cámara**, Tunnels and Marine Works Department Director, **Acciona Infraestructuras SA**

4.10pm **Doha Metro Case Study: Overcoming challenges in constructing deep excavations with high water tables in karstic rock**

- Outline of the Gold Line Metro within the project
- Overcoming geological and hydrological challenges during Doha Metro construction
- Revealing the Cut and Cover station design with depths up to 30 meter
- Highlight the solution stipulated in Tender Documents
- Optimised open cut solution with de-watering scheme
- Lesson learned from the construction of Doha Metro

**Erik Neun**, Principal Engineer, **EDR GmbH**

4.50pm **Overcoming the constraints of urban tunnelling in densely built-up areas in Delhi and Mumbai**

- Highlighting the construction techniques and machines used during the tunnelling
- Overcome uncertainties and dangers of underground construction on a densely built-up area
- Advanced prediction methods of consolidation settlement in densely built-up areas
- Identifying suitable solutions to address ground improvement and ground settlement

**Dr. Manoj Verma**, President, **ISRM Commission on Hard Rock Excavation**

5.30pm **Closing Address by Chairman**

5.40pm **End of Summit Day One**

*Urban Underground Space & Tunnelling Asia Summit 2016 brings together industry leaders across Asia Pacific under one roof. Definitely a must-attend event!*

**Dr. Paul James**, Tunnel Director, **Eptisa**

# SUMMIT DAY 2 - Thursday, 8 September 2016

8.25am **Registration and Welcome Coffee**

8.50am **Welcome Address by Chairman**

9.00am **Hong Kong MTR Railway Case Study:**

## Revealing the Intelligent Models Used in Tunnelling from MTR Railway Project in Hong Kong

- Minimizing the ground vibration impact to the existing structure caused by tunnel blasting
- Applying best approach to predicts the vibration in more accurate and effective way
- Overcoming challenges during excavating a tunnel with limitation on blast vibration constraints
- Revealing the results obtained from MLP Model to conventional predictors and local predictor

**Lawrence TH Lee**, Senior Construction Engineer - SCL-NSL, **MTR Corporation Limited**

9.40am **Mitigate Impact during Urban Tunnels Excavation near Existing Structures and building**

- Evaluating the influence of urban tunnels on existing structures and determining whether impact is acceptable
- Incorporate influence of building stiffness illustrated through applying case studies into impact assessment approach
- Minimizing the lateral movement of the foundations of an existing structure
- Mitigate risks and avoid damage to the existing building

**Guy Taylor**, Project Director, **Metroselskabet I/S Denmark**  
**Simon Taylor**, Head of Tunnelling, **Metroselskabet I/S Denmark**

10.20am **Morning tea and networking break**

10.45am **Naples's La Metropolitana dell'Arte Case Study:**

## Project Management in Construction of Tunnelling & Underground Space Infrastructure Projects

- Targeting resources in project management to evaluate impact over underground station construction
- Planning, design and execution: layers of the sustainability of an infrastructure
- Managing the resolution of interferences as a reduction of costs strategy in underground construction
- Revaluation of the project value: La Metropolitana dell'Arte in Naples

**Paolo Prevedini**, Project manager, **Metropolitana di Napoli spa**

11.25am **London's Victoria Station Upgrading Case Study:**

## Mitigate Impact during Urban Tunnels Excavation near Existing Structures and building

- Evaluating the influence of urban tunnels on existing structures and determining whether impact is acceptable
- Incorporate influence of building stiffness illustrated through applying case studies into impact assessment approach
- Minimizing the lateral movement of the foundations of an existing structure
- Mitigate risks and avoid damage to the existing building

**Dr. Anmol Bedi**, Managing Director, **Bedi Consulting**

12.05pm **Panel Discussion:**

## Best Practises in Design and Planning Underground Space Infrastructure Involving Conservation Structures

- Dealing with opposing impact on conservation building
- Decision criteria for additional mitigation and protective measures
- Evaluating risk of damage using three-staged impact assessment approach
- Applying best protection solution associated underground space infrastructure involving conservation structure

**Panellists:**

**Dr. Paul James**, Tunnel Director, **Eptisa**  
**Keith Kong**, Technical Director, **Black & Veatch Hong Kong Ltd.**  
**Angelo Indelicato**, Engineering Geologist, **Dragages Hong Kong Ltd**

12.55pm **Lunch and networking break**

2.00pm **Developing Effective Solutions for Rock Reinforcement of Underground Excavations**

- Discussion on determining design rock load / rock support pressure for cavern openings
- Understanding the principal of reinforced rock arch
- Implement ways to improve the strength of the rockmass
- Outlining design approach of Shotcrete-Rock-Reinforcement (SRR) lining
- FEM modelling verification to SRR design approach
- Construction Considerations using SRR

**Keith Kong**, Technical Director, **Black & Veatch Hong Kong Ltd.**

2.40pm **Qatar's Metro Tunnels Case Study:**

## Outlining the Construction Challenges for Qatar's 110 km Metro Tunnels

- Underline the effective techniques and methods with collaboration of all the stakeholders
- Highlighting the construction techniques and machines used during the construction
- Introducing the importance of good scheduling and management
- Practical implementation and development of risk management during the course of design and construction

**Dr.-Ing. Markus Demmler**, Senior Director QIRP, **Qatar Rail**

3.20pm **Panel Discussion:**

## Successful vs Failed/Delayed Underground Space & Tunnelling Projects – Lessons Learned

In this interesting and insightful debate, our industry experts will share their experiences on key considerations and past lessons learned on what constituted or contributed to successful OR failed/delayed projects. Our panellists will focus on these attributing factors and how you can design, engineer and plan your current/upcoming projects in a way that will be on time, on budget and with the highest quality possible.

**Panellists:**

**Lawrence TH Lee**, Senior Construction Engineer - SCL-NSL, **MTR Corporation Limited**

**Dr. Anmol Bedi**, Managing Director, **Bedi Consulting**

**Nick Osborne**, Project Director, APNA Practice Leader Geotech & Tunnels, **Mott MacDonald Singapore Pte. Ltd**

4.00pm **Afternoon tea and networking break**

4.20pm **Outlining the Best Geophysical Methods Applied for Tunnelling**

- Exploring useful methods in characterizing subsurface
- Highlight the importance in insitu measurement of shear wave velocity (SWV)
- Understanding polygon modelling and its comparison with tunnel excavation
- Learning Electrical Resistivity Tomography (ERT) to acquire information of larger volumes of subsurface

**Dr. Alun Thomas**, Head of Department: Tunnels, **Ramboll**

5.00pm **Effective Approach for Construction of Urban Cut and Covers Structures and Tunnels**

- Overview of different cut and cover methods used for construction of underground structures in urban areas
- Understand the best practice in using TBMs and NATM approaches
- Underline the effective techniques and methods in managing the design and construction
- A strategic approach to achieve successful cut and cover projects in challenging urban environment
- Highlight the safety and quality aspects in plan, design and construction of cut and covers tunnels

**Dr. Paul James**, Tunnel Director, **Eptisa**

5.40pm **Closing Address by Chairman**

5.50pm **End of Summit Day Two**



## WORKSHOP C

9.00am – 12.00pm (including morning tea break)

### Maximising Efficiency in Design and Construction of Tunnels and Cavities

With the increase in tunnelling projects it is essential to understand the tools and technologies needed to ensure efficient project delivery. It is also vital to understand the latest tunnelling machinery and with the help of case studies learn about the risks of tunnelling in different environments and review the best possible solutions and techniques to mitigate project delays.

#### ***After attending this workshop, attendees will be able to:***

- Improve in the planning of underground space to enhance the efficiency of the design
- Understand the demands and necessities towards constructing of tunnels and cavities
- Outline the consequences of the construction of tunnels in urban areas and how to reduce settlement issues
- Learn about the latest tunnelling machinery to ensure efficient project delivery
- Better understand the importance of site investigations and ground risk in projects

#### **About your workshop leader:**



**Dr. Alun Thomas**  
Head of Department: Tunnels,  
**Ramboll**

Dr Thomas has a broad experience of many types of tunnelling methods from immersed tube tunnels to segmental linings, from closed face TBMs to hand excavation under compressed air. He is a specialist in sprayed concrete lined (SCL/NATM) tunnels and numerical modelling. He has been involved in promoting the use of permanent sprayed concrete, fibre reinforcement and spray-applied waterproof membranes.

Over the last 20 years he has been involved in many of the recent major UK tunnelling projects such as the Jubilee Line Extension, Heathrow Express, Terminal 5 and Crossrail, as well as working on design and construction of tunnels internationally. Notably he has worked in Denmark, Russia, USA, Iceland, Hungary, Singapore, Qatar, India and Hong Kong.

Dr Thomas has given lectures at the British Tunnelling Society course, the Budapest Technical University and the Danish Technical University. A regular contributor to magazines and conferences with more than 50 publications, he has written articles on subjects ranging from sustainability to user-friendly contracts. His book, "Sprayed concrete lined tunnels", has been published in English and Chinese and a Turkish version is under preparation.

Dr Thomas is a member of the ITA's Working Group 12 on Sprayed Concrete. He was the chairman of the ITA-tech group for Precast Fibre Reinforced Concrete Segments which published design guidance in 2015.

## WORKSHOP D

1.15pm - 4.15pm (including afternoon tea break)

### **Developing Effective Solutions for Underground Space Construction in Difficult Ground Conditions**

One of the major difficulties of urban tunnel construction is the complex ground conditions. Regular change of ground condition imposes challenges in selection of excavation method and even result to delay in deadline. This workshop reveals scientific understanding, innovative technology development and good engineering practice.

#### ***After attending this workshop, attendees will be able to:***

- Implement suitable ground treatment techniques for cost efficient project execution
- Incorporate the best approach in excavation depending on the ground characterization
- Reduce project time through providing best excavation method for different ground condition
- Effectively design and engineering of underground space construction

#### **About your workshop leader:**



**Dr. Paul James**  
Tunnel Director,  
**Eptisa**

Dr. Paul has been involved in engineering for over 43 years and is technically qualified through his memberships of professional institutions and appropriate university qualifications.

His experience is widely accepted as contemporary and relevant to today's engineering requirements within the construction sector - and actively engaged experiences range through 8 countries on 4 continents. He gained recognition at Chartered status in at least 5 professional institutions and first become a Chartered Engineer some 23 years ago. He is a life-long learner and undertakes CPD to underpin new developments in areas such as tunnelling, road management, rail, hydro, marine and metro construction.

His present situation as Director of Tunnelling, with a Spanish Company in India requires undertaking responsibility for a large road tunnel project at height in terms of underground tunnelling management, direct input into key aspects of the project timing/scheduling, management of project key engineers and assistant engineers, and takes responsibility as a mentor engineer to a number of younger less experienced/qualified individuals.

Paul has published widely, and has 19 books and 85 other publications in Project Management, ICT, Health and Safety, Quality Management, and environmental impacts of construction.



# Limited Sponsorship & Exhibition Opportunities are still available at the Urban Underground Space & Tunnelling Asia Summit 2016!

Selecting the right technology, equipment and service is imperative, as each investment is worth millions of dollars. Property developers, Project Owners, Ministries and Authorities in Transport and urban development need to weigh the costs of all products available and make a decision based on what they project would be a fruitful investment in the long-run. Equip Global's **Urban Underground Space & Tunnelling Asia Summit 2016** will be the perfect platform for service/solution/technology providers like yourself to meet key decision makers who are NOW looking to invest into underground construction/tunnelling solutions!



## Why get involved EARLY?

I

**Limited sponsorship & exhibition opportunities** to ensure a strictly enforced buy to sell side ratio; only an early confirmation can guarantee your participation.

II

Start the discussion with us early to find out how **you can best partner us to ensure your organisation is reflected in the best way.**

III

Register early to enjoy our **20-week extensive marketing campaigns** that reaches out to leading buy-side companies in Asia.

IV

Reserve your slot on the agenda as we only have **limited speaking and panellist slots** for sell-side, vendors and solutions providers.

V

Book the **most optimally located** exhibition space in the exhibition hall to ensure you are in a prime position.



## Why you should sponsor

- **Get the latest on capability gaps and opportunities** your business could help with from key decision makers within the Underground Space & Tunnelling industry
- **Reach out to potential partners.** **Urban Underground Space & Tunnelling Asia Summit 2016** will provide the perfect platform for you to source new business, distributors and partners in Underground Space & Tunnelling industry
- **Identify future opportunities and win business** with project owners and stakeholders who are looking to invest
- **Network with key decision makers** to capture and maintain front of their mind. **With over 100 underground space/tunnelling decision makers** at the event, establish contacts with your potential clients in the region
- **Thought Leadership** - As a sponsor, your company will gain second-to-none exposure to senior-level decision makers at the point in time that they are seeking solutions, information and systems for improving their firm's strategies
- **Keep up to date** with all the key developments in Underground Space & Tunnelling industry value chain

# URBAN UNDERGROUND SPACE & TUNNELLING ASIA SUMMIT 2016

6 - 9 September 2016, Singapore

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Please photocopy for multiple bookings. Your priority registration code is printed below. Please quote it when registering - **Event Code: CS10047.001**

## PRICING & DISCOUNTS

Price in SGD	Early Bird Price (until 13 May 2016)	Standard Price
<b>Summit + 4 Workshops</b> (Workshop A / Workshop B / Workshop C / Workshop D)	<del>S\$8,895.00</del> S\$6,995.00 (Save S\$1,900.00)	<del>S\$8,895.00</del> S\$7,495.00 (Save S\$1,400.00)
<b>Summit + 3 Workshops</b> (Workshop A / Workshop B / Workshop C / Workshop D)	<del>S\$7,496.00</del> S\$5,946.00 (Save S\$1,550.00)	<del>S\$7,496.00</del> S\$6,446.00 (Save S\$1,050.00)
<b>Summit + 2 Workshops</b> (Workshop A / Workshop B / Workshop C / Workshop D)	<del>S\$6,097.00</del> S\$4,897.00 (Save S\$1,200.00)	<del>S\$6,097.00</del> S\$5,397.00 (Save S\$700.00)
<b>Summit + 1 Workshops</b> (Workshop A / Workshop B / Workshop C / Workshop D)	<del>S\$4,698.00</del> S\$3,848.00 (Save S\$850.00)	<del>S\$4,698.00</del> S\$4,348.00 (Save S\$350.00)
<b>Summit only</b>	<del>S\$3,299.00</del> S\$2,799.00 (Save S\$500.00)	S\$3,299.00
<b>Workshop only</b> (Workshop A / Workshop B / Workshop C / Workshop D)	S\$1,399.00	S\$1,399.00

## TEAM DISCOUNTS

Equip Global recognises the value of learning in teams. Group bookings at the same time from the same company receive these discounts:

**3 or more 7%**  
**5 or more 10%**

This offer is exclusive of the early bird discount. Call us for a special discount rate for teams of 8 and above. Not applicable to workshop(s) and/or site visit(s) only bookings.

## CONFERENCE DOCUMENTATION

I cannot attend the event. Please send me a set of the conference documentation at SGD 999.

## VENUE & ACCOMMODATION

**Furama Riverfront Hotel Singapore**  
405 Havelock Road, Singapore 169633.  
Tel: (65) 6333 8898 Fax: (65) 6733 1588  
Email: riverfront@furama.com

Hotel accommodation and travel costs are not included in the registration fee. A reduced corporate room rate has been arranged for attendees at this conference at this hotel. To take advantage of this special rate, please process the hotel room reservation form provided upon confirmation of your attendance.

## PAYMENT TERMS & CONDITIONS

All 'Early Bird', 'Super Saver' Discounts or any discounts offered by Equip Global require payment at time of registration and before the cut-off date in order to receive any discount. All discount offers cannot be combined with any other offer. - 100% payment is required upon receipt of invoice and includes lunches, refreshments and detailed conference materials. - Registration made within 14 working days of the conference/training must be paid by credit card. - No delegate will be allowed into the conference or training unless all payments are received prior to the conference or training - Discounts do not apply to workshop(s) only bookings. - Please note that creditcard payments will incur a credit card charge of 3.4% + SGD 0.50. - Payment not made at the time of registration will be subject to a SGD99 processing fee.

## EQUIP GLOBAL PAYMENT, CANCELLATION, SUBSTITUTION AND POSTPONEMENT POLICY

Substitution of delegate places is permitted, provided that Equip Global is given reasonable advance notice in writing. \*For any cancellations received in writing not less than fifteen (15) working days prior to the Conference or Training, you will receive a 90% credit to be used at another Equip Global conference which must occur within six months from the date of issuance of such credit. An administration fee of 10% of the registration fee will be retained by Equip Global for all permitted cancellations. No credit will be issued for any cancellations occurring within fourteen (14) working days (inclusive) of the conference or training. \*In the event that Equip Global postpones an event for any reason and the delegate is unable or unwilling to attend in on the rescheduled date, you will receive a credit for 100% of the registration fee paid. You may use this credit for another Equip Global event to be mutually agreed with Equip Global, which must occur within six months from the date of postponement. \*Except as specified above, no credits will be issued for cancellations. In any circumstance, no refund will be made for cancellations. All cancellations must be made in writing. \*Equip Global is not responsible for any loss or damage as a result of a substitution, alteration or cancellation/postponement of an event. Equip Global shall assume no liability whatsoever in the event this conference is cancelled, rescheduled or postponed due to a fortuitous event, Act of God, unforeseen occurrence or any other event that renders performance of this conference impracticable, illegal or impossible. For purposes of this clause, a fortuitous event shall include, but not be limited to: war, fire, labor strike, extreme weather or other emergency. \*While speakers, topics and session timings were confirmed at the time of publishing, circumstances beyond the control of the organizers may necessitate substitutions, alterations or cancellations of the speakers and/or topics and/or session timings. As such, Equip Global reserves the right to alter or modify the advertised speakers and/or topics and/or session timings if necessary without any liability to you whatsoever. Any substitutions or alterations will be updated on our web page and all marketing collaterals as soon as possible.

## REGISTRATION DETAILS

Title	Mr.	Mrs.	Ms.	Dr.	Other
First Name				Last Name	
Company				Department	
Job Title				Email	
Address					
Country				Postcode	
Phone				Fax	
Approving Manager Name					
Email				Phone	
Delegate Signature	Manager Signature			Date	DD/MM/YYYY
				<input type="checkbox"/> I agree to Equip Global's payment terms	

If you have not received an acknowledgement before the conference, please call us on +65 63760908 to confirm your booking.

## PAYMENT METHODS

- I WISH TO PAY BY CHEQUE/BANK DRAFT: Made payable to Equip Global Pte. Ltd  
 I WISH TO PAY BY CREDIT CARD: Please debit my credit card

Card Type	VISA	MASTER	Name Printed on Card
Card Number			Expiry
CVC	Signature	Date	
<input type="checkbox"/> I WISH TO PAY BY DIRECT TRANSFER: Please quote CS10047.001 with remittance advice.			

Equip Global Bank Details: AccountName: Equip Global Pte Ltd  
 Account Number: 630-824993-001  
 Swift Code: OCBCSGSG  
 Bank Code: 7339  
 Bank Address: Overseas-Chinese Banking Corporation Limited  
 63 Chulia Street, OCBC Centre, Singapore 049513  
 JP Morgan Chase Bank, New York, USA  
 Intermediary Bank: CHASU33  
 Swift Code:

All bank charges to be borne by the payer. Please ensure that Equip Global receives the full invoiced amount.