

URBAN UNDERGROUND SPACE & TUNNELLING ASIA SUMMIT 2016

6 - 9 September 2016, Singapore

Book and pay by **13th 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
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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



Dr. Yuan Jinrong
Principal Geotechnical Engineer,
Advisian (WorleyParsons) Singapore

- Over 20-years professional experience in the design, construction and management of civil & structural and geotechnical engineering works
- Experience spans across major Tunnel & Metro Station projects, Landslide/Slope stability analysis and assessment, slope remedial works, shallow/deep foundation design, and the planning and interpretation of site investigations in both China and Singapore



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, Philippine, 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



Prof John Endicott
Fellow,
AECOM

- Designed and consulted for on more than 100 underground railway stations and associated tunnels
- 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)

- 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



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

- Managed Barcelona's Metropolitan Railway and Valencia's Metro construction
- Manager of construction works at sections 8 and 9 of the San Juan Inter City Train (Puerto Rico)



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
- 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



Brendan Henry
Manager – Tunnels and Underground Spaces,
GHD Australia

- Experienced in the planning, design and construction of tunnels, shafts and tunnel systems for road, rail, sewer, water and mines

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



Gain Insights on innovative technologies & proven solutions in underground excavation & tunnelling applied to projects globally



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



Find out the latest techniques on overcoming geo-technical, geo physical, environmental & ground movement challenges



Andreas Koester
Head of Engineering - Civil Works,
Metroselskabet & Hovedstadens Letbane

- 19 years of experience in the engineering industry as Contractor and Client on major infrastructure projects including Malmö Citytunnel and Metro projects in Copenhagen
- Involved in the ongoing construction on the Cityringen and Nordhavn Metro projects in Copenhagen.



Angelo Indelicato
Engineering Geologist,
Dragages Hong Kong Ltd

- Involved actively in international tunnelling projects such as Blackfriars station, and Hong Kong's deepest, longest and largest sub-sea road tunnel, Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-Sea Tunnel Section using the world's largest Tunnel Boring Machine (TBM)



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



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



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

- 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, Philippine, 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 <ul style="list-style-type: none">Managing challenges in bored tunnelling works in IndiaAdaptation of good practices for bored tunnelling works, especially when tunnelling in close proximity to existing buildingsGuidelines for optimal TBM excavation in mixed ground conditionsOutlining key requirements of bored tunnelling works

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

9.30am	Minimizing Cost and Time Delay during Tunnelling Construction Caused by Unexpected Ground Conditions and Obstacles: The Role of Site Investigation <ul style="list-style-type: none">Outlining the effective techniques and definition of ground investigationsOvercome adverse geology along the tunnel alignmentRevealing best methodologies use during ground investigationsMinimizing tunnel accident caused by unexpected ground conditions
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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 <ul style="list-style-type: none">Challenges posed by high ground water flows and the consequence to major urban infrastructure projectsDeveloping measures to control ground water flowDeveloping and understanding the hydrogeological modelControlling groundwater for tunnel and shafts - Pre-excavation grouting and groundwater control
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Nick Osborne, Project Director, APNA Practice Leader Geotech & Tunnels, **Mott MacDonald Singapore Pte. Ltd**

10.50am Morning tea and networking break

11.10am	Ground Improvement for Underground Construction in Soft Grounds <ul style="list-style-type: none">Brief introduction to underground construction and ground conditions in SingaporeStrength of rock/soil and problems posed to underground constructionRoles and functions of ground improvement for underground constructionMethods of ground improvement and their relative strengths and advantages e.g. consolidation and surcharging, cement treatment, ground freezingWhy is cement treatment so popular in Singapore?Typical schemes and process of ground improvement works covering site investigation, treatment, monitoring and quality controlEnhance the current cement treatment schemes
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Dr. Lee Fook Hou, Professor in the Department of Civil and Environmental Engineering, **National University of Singapore**

11.50am	<u>Copenhagen's Cityringen Metro Case Study:</u> Mitigating the impacts of mixed face conditions and contaminated ground <ul style="list-style-type: none">The challenges faced during tunnelling for the first time in Copenhagen's glacial depositsOutline of mitigation measures and experiences when tunnelling through the known contaminated areas along the alignmentDealing with unknown contaminated ground conditions and the approach to mitigating delaysSummary of TBM tunnelling performance to date in the contaminated ground conditions
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Andreas Koester, Head of Engineering - Civil Works, **Metroselskabet & Hovedstadens Letbane**

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

12.30pm Lunch and networking break

1.30pm	Managing and Mitigating Groundwater Infiltration Within the Underground Excavations in Rocks <ul style="list-style-type: none">Water inflow during the tunnelling works affecting both the construction area and the surroundingsExamining the groundwater sourceUnderstanding how to measure water infiltrationExploring mitigation measures
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Kensuke Date, Chief Research Engineer, **Kajima Technical Research Institute Singapore (KaTRIS)**

2.10pm	Managing Geotechnical and Construction Risks of Underground Excavations in Hong Kong <ul style="list-style-type: none">Examining the key geotechnical and construction risks faced based on recent Hong Kong and Singapore projects using Drill and Blast, and TBM Tunnelling techniquesPractical implementation and development of risk management during the course of design and constructionComparing current project perspectives with past lessons learnedMitigate the impacts related to ground settlement and reduce risks associated with geotechnical hazards to an acceptable level
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Prof John Endicott, Fellow, **Dragages Hong Kong Ltd**

2.50pm Afternoon tea and networking break

3.10pm	<u>Barcelona's Metropolitan Railway Case Study:</u> Best Practice in Construction of Complex Urban Tunnel <ul style="list-style-type: none">An overview of different methods used for Metropolitan Railway constructionUnderline the effective techniques and methods with collaboration of all the stakeholdersRevealing the strategic approach to achieve successful in Construction of Complex Urban TunnelHighlight the aspects of tunnelling in a densely populated urban environment
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Rolando Justa Cámara, Tunnels and Marine Works Department Director, **Acciona Infraestructuras SA**

3.50pm	<u>Doha Metro Case Study:</u> Overcoming challenges in constructing deep excavations with high water tables in karstic rock <ul style="list-style-type: none">Outline of the Gold Line Metro within the projectOvercoming geological and hydrological challenges during Doha Metro constructionRevealing the Cut and Cover station design with depths up to 30 meterHighlight the solution stipulated in Tender DocumentsOptimised open cut solution with de-watering schemeLesson learned from the construction of Doha Metro
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Erik Neun, Principal Engineer, **EDR GmbH**

4.30pm	Overcoming the constraints of urban tunnelling in densely built-up areas in Delhi and Mumba <ul style="list-style-type: none">Highlighting the construction techniques and machines used during the tunnellingOvercome uncertainties and dangers of underground construction on a densely built-up areaAdvanced prediction methods of consolidation settlement in densely built-up areasIdentifying suitable solutions to address ground improvement and ground settlement
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Dr. Manoj Verman, President, **ISRM Commission on Hard Rock Excavation**

5.10pm	Design Considerations for Deep Tunnelling <ul style="list-style-type: none">Overcoming challenges during the designing of deep tunnellingAdopting good practices in designing underground infrastructure, especially in difficult ground conditionOutlining key requirements of design and construction of deep excavationRevealing the strategic approach to achieve successful in deep tunnellingReview of deep tunnelling performance during construction
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Dr. Yuan Jinrong, Principal Geotechnical Engineer, **Advisian (WorleyParsons) Singapore**

5.50pm	Closing Address by Chairman & End of Summit Day One
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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

8.15am **Registration and Welcome Coffee**

8.40am **Welcome Address by Chairman**

8.50am **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**

9.30am **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

Andreas Koester, Head of Engineering - Civil Works, **Metroselskabet & Hovedstadens Letbane**

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

10.10am **Morning tea and networking break**

10.50am **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**

11.10am **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**

11.50am **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**

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

12.30pm **Lunch and networking break**

1.30pm **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.**

2.10pm **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**

2.50pm **Panel Discussion:**

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

In this interesting an 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**

3.30pm **Afternoon tea and networking break**

3.50pm **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**

4.30pm **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**

5.10pm **Canada Line Case Study:**

Risk Management in Design and Construction of Tunnels Associated to Geotechnical Conditions Found in Singapore

- Managing challenges in difficult ground conditions
- Managing risk through design, especially when tunnelling in close proximity to existing buildings or structures
- Managing risk during construction for TBM excavation in mixed ground conditions
- Highlighting the different guidelines for optimal TBM excavation in mixed ground conditions

Brendan Henry, Manager – Tunnels and Underground Spaces, **GHD Australia**

5.50pm **Closing Address by Chairman & 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-ech 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
Summit + 4 Workshops (Workshop A / Workshop B / Workshop C / Workshop D)	S\$8,895.00 S\$6,995.00 (Save S\$1,900.00)	S\$8,895.00 S\$7,495.00 (Save S\$1,400.00)
Summit + 3 Workshops (Workshop A / Workshop B / Workshop C / Workshop D)	S\$7,496.00 S\$5,946.00 (Save S\$1,550.00)	S\$7,496.00 S\$6,446.00 (Save S\$1,050.00)
Summit + 2 Workshops (Workshop A / Workshop B / Workshop C / Workshop D)	S\$6,097.00 S\$4,897.00 (Save S\$1,200.00)	S\$6,097.00 S\$5,397.00 (Save S\$700.00)
Summit + 1 Workshops (Workshop A / Workshop B / Workshop C / Workshop D)	S\$4,698.00 S\$3,848.00 (Save S\$850.00)	S\$4,698.00 S\$4,348.00 (Save S\$350.00)
Summit only	S\$3,299.00 S\$2,799.00 (Save S\$500.00)	S\$3,299.00
Workshop only (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

<input type="checkbox"/> I WISH TO PAY BY CHEQUE/BANK DRAFT: Made payable to Equip Global Pte. Ltd	
<input type="checkbox"/> I WISH TO PAY BY CREDIT CARD: Please debit my credit card	
Card Type VISA <input type="checkbox"/> MASTER <input type="checkbox"/>	Name Printed on Card
Card Number	Expiry MM/YYYY
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: OCBGSGSG
Bank Code: 7339
Bank Address: Overseas-Chinese Banking Corporation Limited
65 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.