trueventus®

2nd Annual Underground Space Engineering

Driving Innovation: Redefining Tunnels & Underground of the Future

28 - 29 April 2015 | Singapore

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"Government mulling large-scale underground developments - Prime Minister Lee Hsien Loong says that, the Government is considering more subterranean projects. This includes building an underground science city, an underground warehousing and logistics facility, and potential underground caverns"

-Singapore Business Insider

WHY YOU CANNOT MISS THIS EVENT

The tunnelling and underground industry is booming around the world. As the world's cities continue to grow, so too does the demand for new infrastructure. With numerous opportunities emerging from tunnels and underground projects, now is the time to build new relationships that are essential to winning works.

Following the success of the 2014 event, **TRUEVENTUS 2ND ANNUAL UNDERGROUND SPACE ENGINEERING** continues its journey to the Asian underground city-Singapore! Mega tunnel and underground projects comes with all sorts of engineering challenges. This year's conference will bring together decision-makers from across the industry to provide a unique insight into the complexity and challenges of tunneling in city areas, mitigating construction risk, tunneling through difficult ground conditions, managing groundwater inflows and mircotunelling as well as issues relevant to the design and construction of underground works.

Whether your focus is on TBM driven tunnels, drill & blast tunnels or microtunelling, you should be at this event to hear and meet speakers from all over the World-providing a truly global view to allow you to stay ahead of competition!

KEY BENEFITS OF ATTENDING

Overcoming obstacles in tunnel construction across the globe

Exploring the advancement in sustainable tunneling and trenchless technology

Gauging technical and operational aspects that shape the tunneling and underground industry

Identifying specific challenges in the urban environment and how they can be overcome

Assessing the use of monitoring system to lower project risk

Uncovering the latest technological advances in design and engineering for tunneling and better construction planning

WHO SHOULD ATTEND?

CEOs, COOs, Heads, VP, SVPs, Directors, GMs and senior:

- Engineering and Construction
- Geotechnical Developers
- Pipeline Engineering
- Geotechnical Engineering
- Facilities Management Heads
- Ground Engineering
- Structural Engineering
- Architects
- Designers
- Utilities
- Piling
- Infrastructure

Local Government, Government Departments, Agencies & Authorities:

- Government – Federal, State & Local Councils
- Ministry and/or Department of Works and Transportation
- Rail Operators
- PPP Units / Economic Planning Units
- Financial Institutions, Institutional Investors
- Policy Makers
- Urban Planners

Engineers, Consultants, Project Managers and Contractors involved in:

- Engineering& Construction Firms
- Construction
- Building materials
- Structural
- Mechanical
- Electrical

Technical Specialists:

- Drill & Blast Supervisors
- Technical Superintendent/Managers
- Maintenance Managers
- Project Managers
- Technical Service Managers
- Rock Engineer/Specialists
- Geotechnical Specialists
- Operations
- Maintenance
- Reliability and Asset Management

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Featuring Keynote Presentation and Case Studies Delivered by Distinguished Speakers:

Martin Knights Global Director, Tunneling
Halcrow (CH2M), United Kingdom

Speaking on: What can Asia Learn from Crossrail ?- Future projects could learn from Crossrail's bored tunnels and ground movement mitigation

Martin has over 40 years of broad experience in managing all aspect of civil engineering and infrastructure business and projects, with particular technical emphasis on urban tunnelling and underground projects. Martin was the President of the International Tunnelling Association in 2007-2010 and is also a Member of the British Tunnelling Society Committee.

Angelo Indelicato Engineering Geologist
Dragages Hong Kong Ltd, Hong Kong

Speaking on: Managing and Mitigating Water Infiltration within Underground Areas

Angelo has 7 years of experience in Construction, 4 years working in Hong Kong, 2 years in Tunnel with Drill & Blast technique, last 2 years in deep marine foundation and ground investigation.

Rob McCrae Technical Director
Atkins, Hong Kong

Speaking on: Evaluating the use of monitoring systems for mitigating risks when tunneling in the urban environment

Rob is an experienced professional engineer with over 35 years of international experience working on a variety of major civil engineering projects. He has fulfilled senior management positions for the design and construction of major underground railway schemes both in Hong Kong and internationally. These have included tunnelling, station, permanent way and other varied construction work. Rob has just completed a role as Framework Director for all Atkins input to the Crossrail Project in London.

Dr. Goh Kok Hun Deputy Director, Geotechnical and Tunnels Division
Land Transport Authority, Singapore

Speaking on: The impact of urban tunnels on existing structures: how can potential damage be evaluated and the structures protected?

Dr Goh has 15 years of geotechnical engineering experience, and has been involved in the design aspects of various road and rail infrastructure projects in Singapore since 2001. He completed a doctoral study on the "Response of ground and buildings to deep excavations and tunnelling" in the University of Cambridge

Panya Khammathit Senior Tunnel Engineer
Obayashi Corporation, Singapore

Speaking on: Hard Rock Tunnelling: Cutting through obstacles using hybrid TBM

Panya is in charge of all TBM and tunnel drives allocated by Tunnel Manager. Responsible for TBM progress and execute daily tunnel work programme and report to Tunnel Manager.

John Endicott Geotechnical Engineering & Tunneling Asia
AECOM, Hong Kong

Speaking on: Underwater ground reinforcement to prevent subsidence

Prof. John Endicott is an AECOM Fellow. He has been the Project Director for deep drainage tunnels and the Geotechnical Specialist for deep sewer tunnels in Hong Kong and is currently involved with deep cable tunnels and deep sewer tunnels in Singapore

Nick Osborne Senior Project Manager
Mott McDonald, Singapore

Speaking on: Controlling groundwater for tunnel and shafts: Pre-excavation grouting and groundwater control

Nick Osborne has over 20 years international experience working on major underground Infrastructure projects. Projects he has worked for includes; Channel tunnel, Jubilee line extension

Gusztav Klados Project Manager
MMC-Gamuda KVMRT UG SBK Line, Malaysia

Speaking on: Exploring the tunneling experience in the most difficult karstic limestone rock conditions

Gus Klados is a Hungarian structural engineer specialised in mechanised tunnelling, having worked around the world on several tunnelling projects. In 42 years Klados worked in leading positions on many big projects namely; the SMART Tunnel in Malaysia, the Channel Tunnel

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Featuring Keynote Presentation and Case Studies Delivered by Distinguished Speakers:

Dr. Poh Teoh Yaw Deputy Director, Deep Excavation and Geotechnical Department
Building and Construction Authority (BCA), Singapore

Speaking on: Tunneling in mixed ground condition- a challenge to design and construction

Dr Poh is a geotechnical specialist with over 18 years of practical experience. He has authored over 15 publications in geotechnical design and construction including those published in international peer-review journals and conferences.

Sugondo Gan Senior Tunnel Manager
Shimizu Corporation, Singapore

Speaking on: Reinforcing geotechnical investigation to avoid project delays and cost over-runs

Has over 15 years working experiences in the major tunneling projects for urban rail and sewerage infrastructure under various geological conditions with major contractors, consultant/client organization. Specialties: Underground work, TBM Tunneling, Shaft Excavation, SCL Tunnel

Sivaram Thirumoorthy Geotechnical Design Team Leader
ERL Project, Singapore

Speaking on: Numerical investigation on urban tunneling: Influence of segmental joints and deformability of ground

Sivaram has over 14 years of diversified international work experience in civil, geotechnical and tunnelling industry. He is specialized in underground metro projects, Involved with various metro projects around the world. He is expertise mainly in settlement analysis, damage assessment, Instrumentation and Monitoring

Eng. Guiseppe Maria Gaspari Senior Geotechnical Engineer
Geodata Engineering S.p.A, Italy

Speaking on: Innovative approach for construction of urban cuts and covers structures tunnels

Giuseppe M. Gaspari published more than 15 scientific articles in international conferences and technical journal. He plays an active role in SIG (Italian Tunnelling Association, affiliated to ITA) and he is the Italian Young Geotechnical Engineers Annual Meeting Organizer and the representative of AGI (Italian Geotechnical Association) at the ISSMGE.

Neil Smith Director
SP Powergrid Ltd., Singapore

Speaking on: The Cable Tunnel Story: Overcoming the existing congestion of underground space and utility services in Singapore

Has over 24 years of experience working on major underground infrastructure projects in the UK, Hong Kong and Singapore, employed by Clients and Consultants. He is currently employed as Project Director for Singapore Power, leading a team to deliver a number of cable tunnel projects to provide a long term electricity distribution network for Singapore. A total of 7 contracts have been let to deliver approximately 42km of underground cable tunnels housing a combination of 230 & 400KV circuits.

Justin Taylor Risk Manager
Leighton Asia Limited, Hong Kong

Speaking on:Horizontal directional ground investigation- Reducing tunneling risks by minimizing geological uncertainty

Justin has previously worked on underground tunnelling infrastructure projects for railways and waste disposal utilising drill & blast, raise-boring, shaft sinking and hard rock TBM's providing both engineering and commercial support. Justin is the immediate past Chairman of the Hong Kong Institute of Engineers (Geotechnical Division) Working Group on Cavern and Tunnel Engineering.

David Hake Construction Manager
Jon Holland, Australia

Speaking on: Managing geotechnical and construction risk of underground excavations in Hong Kong & Singapore

David Hake is a civil engineer with over 24 years of experience in underground construction in Australia, the United Kingdom, Hong Kong and Singapore. This experience includes current support for SIL(E)904 in Hong Kong, DTL3 C935 and Thomson Line T208 in Singapore, completion of Airport Link Project in Brisbane, Kowloon Southern Link and Kai Tak Transfer Scheme in Hong Kong, the Northside Storage Tunnel Alliance for Sydney Water and the North Western Sewer Project in Melbourne.

Day 1, Wednesday 28th April 2015

0800 **Registration and Coffee**

0845 **Opening Address by Chairperson**

0900 **Session One**

What can Asia Learn from Crossrail? - Future projects could learn from Crossrail's bored tunnels and ground movement mitigation

Crossrail is amongst the most significant infrastructure projects ever undertaken in the UK. Digging tunnels, shafts and basements always causes small movements. This session will highlight discussion to mitigate the effects of ground settlement arising from Crossrail construction developing tunnel boring machine.

Martin Knights Global Director, Tunneling
Halcrow (CH2M), United Kingdom

0945 **Session Two**

The Cable Tunnel Story: Overcoming the existing congestion of underground space and utility services in Singapore

In a land scarce Singapore, were the road reserves are becoming increasingly congested with utilities and services, there is a need to develop a number of cable tunnels to secure a reliable electricity distribution network.

- The design life of a cable within a tunnel is increased considerably when compared to the conventional direct burial method and the maintenance & replacement of cables does not cause any inconvenience to the public in the streets above.
- Outlining the 42km network cable tunnels currently under construction and describe some of the construction challenges that the Project team are facing
- Sharing new safety initiatives that have been developed by Singapore Power in order to improve the standard of safety across all project sites

Neil Smith Director
SP Powergrid Ltd., Singapore

1030 **Morning Refreshment**

1100 **Session Three**

The impact of urban tunnels on existing structures: How can potential damage be evaluated and the structures protected?

One of the biggest issues for underground construction in a densely built-up urban environment is the potentially adverse impact on buildings due to tunnelling and excavation activities. This session seeks to highlight the following key elements:

- Evaluating the influence of urban tunnels on existing structures and determining whether impact is acceptable or whether additional mitigation and protective measures need to be implemented: How is the risk of damage evaluated using a three-staged impact assessment approach
- The influence of building stiffness illustrated using case studies, and how this may be incorporated into the impact assessment approach

Dr. Goh Kok Hun Deputy Director, Geotechnical and Tunnels Division
Land Transport Authority, Singapore

1145 **Session Four**

Exploring the tunneling experience in the most difficult karstic limestone rock conditions

The underground section of the KVMRT SBK Line is excavated in the urban areas of Kuala Lumpur, half of the 9.5km in very adverse geological conditions. This session is to highlight the key elements of how the foreseeable tunnelling problems were successfully mitigated by the innovative use new tunnelling technology the Variable Density TBM (VD TBM);

- Zooming into the experience lead to the development of the VD TBM
- Examining the new features of the VD TBM
- Exploring the experiences of successfully using the VD TBM
- Analysing potential further developments in VD TBM technology

Gusztav Klados Project Manager
MMC-Gamuda KVMRT UG SBK Line, Malaysia

1230 **Networking Luncheon**

1400 **Session Five**

Numerical investigation on urban tunneling: Influence of segmental joints and deformability of ground

Prior to excavation, the magnitude and distribution of the ground surface movements should be evaluated in order to assess their impacts on adjacent structures. This session will discuss the use of HSS numerical modeling.

Sivaram Thirumoorthy Geotechnical Design Team Leader
The ERL Project, Singapore

1445 **Session Six**

Reinforcing geotechnical investigation to avoid project delays and cost over-runs

- Assessing the extent of geotechnical investigation
- Establishing a preliminary design investigation plan
- Examining the methods and instrumentation, that should be used to maximise data generation in the process
- Exploring the best option in improving site exploration methods and the costs involved
- How existing geological, seismic and geophysical data can be best used to enhance your investigation

Sugondo Gan Senior Tunnel Manager
Shimizu Corporation, Singapore

1530 **Afternoon Refreshments**

1600 **Session Seven**

Evaluating the use of monitoring systems for mitigating risks when tunneling in the urban environment

Increasingly complex instrumentation and monitoring schemes, involving collection of vast amounts of data, are being used on tunnel schemes in the urban environment. The interpretation of this data can greatly aid the planning and implementation of any necessary mitigation measures. This session will consider among other factors:

- The planning of instrumentation systems to provide the necessary data to determine if mitigation measures are required
- How the data arising can be best evaluated against pre-determined models or predictions to trigger mitigation actions
- The effectiveness of monitoring systems (in terms of time, cost and stakeholder confidence) in providing useful input to mitigate risks arising from urban tunnelling

Rob McCrae Technical Director
Atkins, Hong Kong

1645 **Session Eight**

Examining the reduction of flow water into tunnels to prevent subsidence

Tunneling can result in subsidence of the ground above the tunnels. In urban areas utilities and structures can be adversely affected. For deep tunnels the effects are mostly due to leakage of ground water into the tunnels. Therefore the flow of ground water into tunnels during construction must be carefully controlled.

- Methods of assessing to what extent the flow of water into deep tunnels should be limited
- How the amount of inflow can be addressed at the design stage
- What practical considerations should be given regarding the methods of construction and the means of reducing the rates of inflow to meet specified limits

John Endicott Geotechnical Engineering & Tunneling Asia
AECOM, Hong Kong

1730 End of Day One

Day 2, Thursday 29th April 2015

0800 **Registration and Coffee**

0845 **Welcome address**

0900 **Session One**

Thinking deep: Construction of tunnel under the sea- Marina Coastal Expressway (MEC) - Case Study

The MCE will be a major engineering challenge, especially the section that has to be constructed below the sea. Difficult soil conditions, coupled with the scope of excavation, will require robust temporary works for the earth retaining systems, as well as extensive ground improvement works to ensure safety, hear the speaker as he takes you on a technical journey of the MEC.

Speaker to be advised

0945 **Session Two**

Tunnelling in mixed ground condition - a challenge to design and construction

Requirements and good practices of bored tunnelling works

- Highlighting some of the challenges in bored tunnelling works in Singapore
- Good practices for bored tunnelling works, especially when tunnelling in close proximity to existing buildings
- Sharing of key requirements of bored tunnelling works

Dr. Poh Teoh Yaw
Deputy Director, Deep Excavation and Geotechnical Department
Building and Construction Authority (BCA), Singapore

1030 **Morning Refreshments**

1100 **Session Three:**

Managing and mitigating groundwater infiltration within underground excavations in rock

Underground excavation often involves dealing with groundwater infiltration. The management and mitigation of water inflow is important during the tunneling work as it affects both the construction area and the surroundings. This session will focus on the followings key elements:

- Examining the groundwater source
- Understanding how to measure the water infiltration
- Examining the mitigation measures
- Sharing of past cases

Angelo Indelicato Engineering Geologist
Dragages Hong Kong Ltd, Hong Kong

1145 **Session four: Joint Presentation**

Managing geotechnical and construction risk of underground excavations in Hong Kong & Singapore

- Examining the key geotechnical and construction risks faced on recent Hong Kong and Singapore projects using Drill and Blast and TBM Tunnelling techniques
- Reviewing the Hong Kong and Singapore requirements of risk management during design and construction of underground works and their impacts to the process
- Practical implementation and development of risk management during the course of the design and construction from a current project perspective, with a view of the lessons learned

Justin Taylor Risk Manager
Leighton Asia Limited, Hong Kong

David Hake Construction Manager
John Holland, Australia

1230 **Networking Luncheon**

1400 **Session Five**

Controlling groundwater for tunnel and shafts: Pre-excavation grouting and groundwater control

A significant number of problems encountered during excavations are driven by groundwater flow into the excavation causing instability and large settlements and damage to surrounding structures. This session will discuss the following topics:

- Developing and understanding the hydrogeological model
- Challenges posed by high ground water flows and the consequence to major urban infrastructure projects
- Measures to control ground water flow
- Case studies highlighting and discussing the issue

Nick Osborne Senior Project Manager
Mott McDonald, Singapore

1445 **Session Six**

Innovative approach for construction of urban cut and covers structures and tunnels

The cut and cover method is frequently used for construction of underground structures in urban areas. This session will underline the innovative techniques and methods with collaboration of all the stakeholders, to achieve successful cut and cover projects in challenging urban environment.

Eng. Guiseppe Maria Gaspari Senior Geotechnical Engineer
Geodata Engineering S.p.A, Italy

1530 **Afternoon Refreshments**

1600 **Session Seven**

Hard Rock Tunnelling: Cutting through obstacles using hybrid TBM

The challenging for the operating TBM through the obstacles underground is most excited and hard to expect for the tunnelling construction. Most of TBM breakdown cause delayed excavation progress and time consuming in the past tunnel projects because of unexpected ground condition and the obstacles. Hybrid machine is multi-purpose and ability TBMs and designed for this purpose to achieve a good performance and minimise cost and time delay. The following obstacles base on past experienced to be discussed:

- Unexpected Ground condition, Mixed Face, Face collapse, Shear/Fault zone
- Existing structures, Abandoned foundation, Shallow tunnel, Micro tunnelling, MRT and Deep tunnel DTSS, Cable Tunnel
- Granite, Boulders, Abrasive rock, Rock fragmentation
- Tunnelling beneath open water

Panya Khammathit Senior Tunnel Engineer
Obayashi Corporation, Singapore

1645 **Session Eight**

Optimising existing underground infrastructure using trenchless technology – Case Study Indah Water

Trenchless tunnelling technology will continue to develop alongside the growth of pipeline infrastructure. This session seeks to explore the key advantages of trenchless technology over traditional open-cut construction as well as over other underground construction method form a underground waste water facilities.

Speaker to be advised

1730 **End of Conference**

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COMPANY DETAILS

Name	Industry
Address	
Postcode	Country
Tel	Fax

ATTENDEE DETAILS

1	Name	Job Title
	Tel	Email
2	Name	Job Title
	Tel	Email
3	Name	Job Title
	Tel	Email
4	Name	Job Title
	Tel	Email
5	Name	Job Title
	Tel	Email

APPROVAL

NB: Signatory must be authorised on behalf of contracting organisation.

Name	Job Title
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COURSE FEES

USD 2195 per delegate

☐ Documentation Package USD 495

All options inclusive of delegate pack, luncheon and refreshments.

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TERMS & CONDITIONS

1. The course fee is inclusive of the event proceedings, materials, refreshment and lunch.
2. Upon receipt of the complete registration form, invoice will be issue. Trueventus request that all payments be made within 5 working days of the invoice being issued. Full payment must be received prior to the event. Only delegates that have made full payment will be admitted to event. Clients are responsible for their own banking fees and banking fees will not be absorbed into the booking price.
3. Substitution & cancellations policy. Should the registered delegate is unable to attend, a substitute delegate is welcome at no extra charge. Written notifications of all substitutions is required 5 working days prior to the event. Trueventus contracts carry 100% full liability upon receipt of registration. Non payment does not constitute cancellation. A 100% of cancellation fee will be charged under the terms outlined below: Due to limited event seats, Trueventus agrees to book and confirm the seat for the client upon issuance of invoice. Upon signing of this contract, client agrees that in case of dispute or cancellation of this contract Trueventus will not be for total contract value. If a client does not attend the event without written notification at least 5 working days prior to the event date, he/she will deemed as no show. A no show at the event still constitutes that the client will have to pay the invoice amount that was issued to them. Trueventus does not provide refunds for cancellations. By signing this contract the client also agrees that if they cancel that Trueventus reserves the right to pursue monies owned via the use of local debt collection agency were the client is situated. Furthermore the client will be held liable for any costs incurred in collection of outstanding monies. When any cancellations are notified in writing to Trueventus 5 working days prior to the event, a credit voucher will be issued for use in future Trueventus events.
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