



# SINGAPORE GEOLOGICAL CONDITION UPDATES AND HOW IT AFFECT DEEP EXCAVATION & TUNNELING WORK

Organised by Civil & Structural Engineering Technical Committee, Geotechnical Division

2 October 2019, Wednesday  
NOVOTEL CLARK QUAY  
9am to 5.30pm

## Sponsors

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## ABOUT THE SEMINAR

Singapore urbanization and geological conditions have been a great challenge to tunneling and deep excavation works. Singapore is a small island state, but is densely urbanized and with highly varied geological conditions. Extensive tunneling and tunneling works over the last 30 years has had to overcome the challenges of that geology and highly developed urban conditions of Singapore. Cautious deep excavation work and operation of TBMs has been a significant factor in reducing the risk associated with the tunneling and deep excavation for development of underground space in Singapore.

Major infrastructure route in Singapore generally run through all major geological formations Various ERSS types were adopted in the cut and cover excavation works depending on the ground condition. Slurry TBMs are chosen typically for tunnelling through rock and mixed face conditions in Bukit Timah Granite whereas EPBM type TBMs are generally adopted for all other ground conditions In this Seminar prestigious speakers from the tunneling and deep excavation field will be presenting on updates of geological conditions of Singapore, guidelines of bored tunneling in Singapore, design of underground structure with complex interfacing and challenges to deal with the interface, and some of the case histories on geotechnical challenges encountered during the constructions together with the appropriate mitigation measures.

## CPD PROGRAM

STUs (Structural) / PDUs for PEs and CEngs / TUCCS (All to be Confirmed)

## FEES:

\$150 (IES Members /

\$192.60 CIJC Members) /

\$214 (Non Members)

Sign up as Group of 5 to enjoy member rate at: \$749

*(Rates Includes GST, 2 Tea Breaks and Lunch)*

## FOR WHOM

This Seminar is specially prepared for developers, contractors, consultants, engineers and qualified site supervisors (QSS) – RE & RTO. We have invited experienced speakers from the academic and industry to present on relevant topics on ensuring safety, good practice to mitigate risks, and valuable learning points from past incidents and project experience

## TOPICS & SPEAKERS



The New Stratigraphic Framework for Geology of Singapore and Its Application (2018) (Part 1)

By **Er. Kiefer Chiam**

*Director of Geological & Underground Projects Department, BCA*



The New Stratigraphic Framework for Geology of Singapore and Its Application (2018) (Part 2)

By **Er. Michael Goay**

*Senior Engineering Geologist, BCA*



Overcoming Challenges of Development Interfacing with Railway Structures

By **Er. Dr. Victor Ong**

*Managing Director, One Smart Engineering Consultants Pte Ltd*



Guideline for Supervision for Bored Tunnelling Works

By **Dr. Poh Teoh Yaw**

*Director, BCA*



Big Data Analysis on Displacement for Tunnelling in Singapore Soil

By **Dr. Sun Jianping**

*Design Manager, CCCC-SJ Pte Ltd*



Design Challenges of Bored Tunnelling for Deep Underground Water Pipe Installation in Downtown Singapore

By **Er. David Ng**

*Executive Director, One Smart Engineering Consultants Pte Ltd*



Foreseeable vs Unforeseeable Adverse Ground Conditions - How to better manage ground risk

By **Mr. Andrew Forsythe**

*Principal Engineering Geologist, Mott Macdonald Group*

**FOR MORE  
INFORMATION,  
PLS CLICK [HERE](#)**

# VISION ZERO SEMINAR 2019

## A HOLISTIC APPROACH TO WORKPLACE SAFETY & HEALTH

1 NOVEMBER 2019 (FRIDAY),  
1.30PM to 6PM

CPD Program: **STU (Safety) / SDUs / PDUs**  
for PEs and CEngs – All TBC

Holiday Inn @ Orchard City Centre,  
11 Cavenagh Rd, Singapore 229616  
Level 2, Crystal Ballroom

Statistics by the Ministry of Manpower, Singapore indicates 41 workplace fatalities last year.

Every incident is preventable, and with the objective of promulgating the Vision Zero mindset in all stakeholders, companies and individuals, The Institution of Engineers, Singapore (IES) is organising Vision Zero Seminar 2019.

Supported by the Ministry of Manpower, Singapore and Workplace Safety and Health Council, and along with supporting partners - Ministry of Manpower and Workplace Safety and Health Council as well as supporting organisations like - ACES, IOSH, SMF, STAS and SCAL, OEHS, REDAS, SCAL, SIA, SISO, SMF and STAS. This full-day seminar will comprise talks from various stakeholders on how the Vision Zero concept is embraced and implemented in practice, as well as lively panel discussions discussing the collectively and sustainable adoption of Vision Zero in Singapore.

### WHO SHOULD ATTEND:

*Engineers from any discipline, senior line and functional managers, all professionals with a passion for improving organisational WSH performance, and anyone interested in learning about Vision Zero*

### Fees:

**\$80** (IES Members )  
**\$100** (CIJC Members)  
**\$120** (Non Members)  
**\$350** (Group of 5 Members)  
*(Above rates exclude GST, 7% GST applies)*



Towards Vision Zero – An Impossible Journey?  
Mr. Chan Yew Kwong  
*Senior Consultant, WSHC*



Vision Zero – Can We Collectively Make It Happen & Sustain It?  
Moderator: Dr. Goh Yang Miang  
*Associate Professor, School of Design and Environment, NUS*



Safety Starts from the Top  
Mr. Bernard Esselinckx  
*Chairman, Health, Safety, Security & Environment Function Committee, SMF*



Our Vision Zero Journey from Boardroom to Field  
Mr. Bernard Ong  
*Operations Director, Vopak Terminal Singapore*



Dimensioning and Transforming WSH Roadmap through Vision Zero  
Mr Bhupendra Baliyan  
*Manager, DIAP-Daelim JV*



How to Effectively Implement Vision Zero Programmes & Challenges  
Moderator: Mr. Jason Oh  
*Principal Consultant, JOH Safety Consultancy*

For More Information,  
Please click [HERE](#)

Organised By:



THE INSTITUTION OF ENGINEERS,  
SINGAPORE,  
INFRASTRUCTURE CLUSTER,  
HEALTH & SAFETY ENGINEERING TECHNICAL  
COMMITTEE

## TOWARDS VISION ZERO – AN IMPOSSIBLE JOURNEY? by MR. CHAN YEW KWONG



The Vision Zero (VZ) movement was started in 2015 at the launch of the national WSH Campaign 2015. The Campaign's message was "I can prevent all injuries and be healthy at work". Through the movement, MOM, WSHC and strategic industry stakeholders aim to bring all employers and employees together to embrace the mindset that all injuries and ill health at work can be prevented and a belief that zero harm is possible.

VZ was started from Sweden. In 1997, the Swedish Parliament introduced a VZ policy that requires fatalities and serious injuries on its roads be reduced to zero. Its VZ's concept changes the focus, from the prevention of accidents, to inculcating the view that no one should lose their lives or be seriously injured on the road.

Is VZ at workplaces an impossible journey? This paper shares the ongoing VZ journey for WSH in Singapore.

Mr. Chan Yew Kwong is the Director (Special Duties) in the Ministry of Manpower's Occupational Safety & Health Division (OSHD). He has been with the Ministry of Manpower for about 35 years, serving in various management roles. From Oct 2013 to Mar 2018, he was the Director of OSH Inspectorate where he oversaw the development and execution of enforcement strategies and programmes for regulatory compliance and surveillance across all industries, and ensured the effective implementation of OSH standards at the workplaces.

From Nov 2011 to Sep 2013, he was also Director of Industry Capability Building in the WSH Council where he was responsible for the national WSH competency framework and capability building efforts in organisations and individuals. He oversaw the roll-out and implementation of the Council's first WSH culture building programme.

Mr. Chan is also very involved in the development and promotion of WSH-related Singapore Standards of the EnterpriseSG (formerly SPRING). He was a Member of the Singapore Standards Council from Apr 2011 to Mar 2017 and currently the Advisor to the Singapore Standards Council's Quality & Safety Standard Committee (Apr 2017 - Mar 2020).

## SAFETY STARTS FROM THE TOP by MR. BERNARD ESSELINCKX



In this age of digital technology and social media of fast-moving news and soundbites, it is ever important that the culture of safety at work must be promulgated from management down. Management must believe in its importance and ensure that the emphasis on safety is cascaded down and permeated into all staff at all levels. Management must take the lead to show the way to achieve the Vision Zero mission. This session will emphasise this message of how this can be done, with practical examples from private corporations like Senoko Energy. This session will also share how Trade Associations like the Singapore Manufacturing Federation (SMF) can help to promote workplace safety and health.

Mr. Bernard Esselinckx, President & CEO Senoko Energy, Belgian, joined ENGIE in 2007, starting as a Business Developer in Dubai, UAE where he successfully led the bid for Riyadh IPP, a 1,700 MW greenfield combined cycle power plant (CCGT) in Saudi Arabia. In 2010, he became CEO of Al Suwadi Power Company, a JV owned 46% by IPR-GDF SUEZ, which was set up to build, own and operate the 750 MW Barka 3 CCGT power plant in Oman. Which started operation on schedule in April 2013. From 2013 until end 2016, he was CEO of Meenakshi Energy Private Ltd, the first investment of ENGIE in power generation in India, consisting of two coal fired merchant power plants of 300 MW in operation and 700 MW in construction.

He was nominated President & CEO of Senoko Energy on 1 June 2017 and is also a Council Member of the Singapore Manufacturing Federation and the World Energy Council (Singapore Chapter). Prior to ENGIE, Bernard worked for 4 ½ years in Mexico and Belgium as Export Manager for ACV International, a medium-sized manufacturer of residential and commercial boilers & 3 ½ years in consulting at URS Corporation (now AECOM) and Athur D Little. Bernard has a MSc in Civil Engineering from Universite Catholique de Louvain, Belgium and in Environmental Engineering from Trinity College Dublin, Ireland as well as an MBA from IMD, Switzerland.

## OUR VISION ZERO JOURNEY FROM BOARDROOM TO FIELD by MR. BERNARD ONG



In the drive for Vision Zero, management leadership, along with organisational alignment and commitment, is critical. In this session, Bernard will share how Vopak - the world's leading independent tank storage company - is building a culture of Care for Safety, Health and Environment from boardroom to field, while harnessing innovation, to improve its WSH performance.

Mr Bernard Ong is Director of Operations at Vopak Terminals Singapore. He is responsible for safety, health and environment (SHE), operations, maintenance, customer service, projects, engineering, procurement, IT, innovation, learning and organisational effectiveness.

Prior to his current role, Bernard has amassed 19 years of manufacturing and supply chain experience with ExxonMobil across three manufacturing sites and five locations across the globe.

## DIMENSIONING AND TRANSFORMING WSH ROADMAP THROUGH VISION ZERO by MR. BHUPENDRA SINGH



Vision Zero is a mindset ingrained with a philosophy where everyone accept that there is a foreseeable cause for incidents and all incidents are preventable. Vision Zero is a concept started way back in 1997 in Sweden and very much adopted by Singapore in 2014 as a strategic thrust to improve WSH performance. Diap Daelim JV embarked on vision zero journey in year 2017.

Vision Zero was strategized at the workplace by adopting 3 Dimensions namely; Engage, Educate and Enable. Every dimension was strategically implemented in the vision zero programme(s) throughout year where every stakeholders right from the top management to the rank and file were committed. Presentation discuss the management approach and 3 dimensions adopted to inculcate safety mindset. Detail data analysis was carried out to identify critical improvements to be achieved and plan the vision zero programme . With 2500 personnel working 24/7, Vision zero achieved its target goals in each subsequent years where there were no reportable incidents during the programme and workplace achieved significant improvement in WSH performance.

Mr. Bhupendra Singh Baliyan, registered safety and health officer, a WSH auditor and a chartered member of IOSH, currently heads the Health, Safety, Environment and Security department at Tuas Terminal Project Phase 1 in short "Tuas Mega Port" worth of S\$2.47 Billion.

He has been working in the field of occupational safety and health and environment for last 24 years and served on various HSE committees and organisation and represent in Spring Singapore standards as working group member. He is a member of the Health and Safety Engineering Technical Committee Institute of Engineers, Singapore and actively participates and represents IES and IOSH. Besides his full time employment, Mr. baliyan volunteered to be a workshop safety officer in Singapore Armed Force. He is an immediate past chairman of IOSH Singapore branch.

Mr. Baliyan has obtained academic degrees in M.Sc. (Transportation Engineering) from Nanyang Technological University, M.Sc.

# HOW DESIGN FOR SAFETY (DFS) BENEFITS STAKEHOLDERS TOWARDS VISION ZERO by MR. JASON OH



Vision Zero believes that all workplace injuries and ill-health are preventable. It was embraced at the “Construction WSH Leadership Summit 2015” with the theme “Towards VZ –Together, delivering excellence in WSH for the built environment”. DfS believes in upfront planning & influence right from the beginning to benefits all stakeholders, i.e. life cycle of a structure or building (concept-detailed design which includes repair and maintenance, as well as pre-construction-A&A- demolition). This paper will share a few positive DfS practices, which align with VZ journey in Singapore.

Mr. Jason Oh is the DfS Professional of JOH Safety Consultancy Pte Ltd. He has been a registered DfS Professional with WSH Council from 2010.

Mr Jason has 25 years of Project Engineering Design, Construction and Management experience. He obtained his B.Eng (Civil) (Hons) from the University of Glasgow, United Kingdom and furthers his study at the National University of Singapore for his Master of Science (Safety, Health and Environmental Technology). He ventures into the construction and manufacturing industry starting from ground as an Engineer, Safety Officer/ Manager, Civil & Structural Designer, Project Manager, Project Director, General Manager and to a DfS Professional.

Mr. Oh is a Fellow member of IES (FIES); Past Chairman for the Health & Safety Engineering Technical Committee, IES (2011 to 2015); Ex. Council member, IES (2011 to 2015); Ex. Committee member, IOSH (Singapore Branch) (2017-2019); Assessment committee for Fire Safety Design Excellence Awards in 2017; Co-Convenor for the Singapore Standard (SS 559: 2010) review committee (Code of Practice for Safe use of Tower cranes) (2017-2019).