



Two-Day Training Session for Continuing Education

Tunnelling for Transport in Urban Areas

February 28 – March 01 2015 Kuala Lumpur, Malaysia

The objective of the course is to introduce the design & construction approaches for tunnelling in urban areas.

Saturday 28 February 2015

Session 1: General

- 08:30-08:45 Welcome & opening - Ooi Teik Aun & S. Eskesen
- 08:45-09:30 Why go underground in urban areas – S. Eskesen
- 09:30-10:30 General aspects of urban tunnelling – Environmental issues – S. Eskesen
- 10:30-11:00 Coffee Break
- 11:00-12:00 Presentation of the different tunnelling methods in urban areas & elements for the choice of the method – F. Amberg
- 12:00-13:30 Lunch

Session 2: Mechanized tunnelling

- 13:30-14:30 Slurry shield, EPB, soil conditioning - T. Babendererde
- 14:30-15:30 Segmental lining design for mechanized tunnelling - T. Babendererde
- 15:30-16:00 Coffee Break

Session 3: Conventional Tunnelling

- 16:00-17:00 Excavation methods & basics aspects of design – T. Celestino
- 17:00-18:00 Ground reinforcement, support, lining – T. Celestino

Sunday 01 March 2015

Session 4: Risk management

- 08:30-09:30 Risk management for urban tunnels – S. Eskesen
- 09:30-10:30 Site investigation – D. Peila
- 10:30-11:00 Coffee Break
- 11:00-12:00 Health & Safety – R. Haug
- 12:00-13:30 Lunch

Session 5: Monitoring

- 13:30-14:30 Geotechnical monitoring – E. Chirioti
- 14:30-15:30 TBM monitoring – F. Amberg
- 15:30-16:00 Coffee Break

Session 6: Case histories

- 16:00-16:30 Example case 1: TBM Solutions & Leak Sealing Repair – Normet - Kah Fai Lee
- 16:30-17:00 Example case 2: Sofia metro: Tunnelling underneath the Lions Bridge – SYSTRA - E. Leca
- 17:00-18:00 Example case 3: Malaysian case studies – Ooi Lean Hock & G. Klados
- 18:00-18:30 Final remarks & closing

Lecturers of the seminar. *In the order of their intervention*



Søren Degn Eskesen (COWI, ITA-AITES President)>> Søren Degn Eskesen (MSc, BSc), has 30 years working experience as project manager and tunnel advisor in multidisciplinary projects for public as well as private clients and a consortia of international contractors.

He has both technical & non-technical knowledge of development of projects from feasibility studies, to tender strategies, to detailed design & Construction Supervision. Søren Degn Eskesen is the current President of the ITA-AITES & President of the Danish Society for Tunnels & Undergrounds.



Felix Amberg (Amberg engineering Group)>> Felix Amberg is the President of the Amberg Group (Amberg Engineering Ltd, Amberg Technologies Ltd & Hagerbach Test Gallery Ltd). His special knowledge focuses on Road & Railway tunnel construction, Special Construction, Material Technology, Measuring Equipment for State Assessment of Tunnels, Project Management & Safety and Security. He holds several other positions such as the treasurer & member of the ITA ExCo, Tutor of the ITACOSUF Committee, ITA Tutor WG 12, Secretary, & Treasurer of the ITACET Foundation Council, Former Swiss Tunnelling Society President, and President of the CUC Foundation & L-SurF Foundation.



Tim Babendererde (Babendererde Engineers) >> Partner in Babendererde Engineers GmbH Tim Babendererde has 9 years of experience as engineer with construction companies and as consultant in the field of international tunnelling.

His professional experience cover the following topics: Planning, design, supervision and consultancy for tunnels, underground constructions, compressed air works and construction pits. Site specialist and support for tunnels in difficulties. Loss adjuster for insurance companies.



Tarcísio Barreto Celestino (Themag Engenharia and São Paulo University) >>

Professor Celestino was the past Brazilian Tunnelling President from 2006 – 2010. He earned his doctorate degree in Civil Engineering (Rock Mechanics) from the University of California, Berkeley (1981). He is currently employed by the Themag Engenharia Ltda., São Paulo (Brazil), one of the leaders in Geotechnical Engineering, Engineering Geology & Transportation Engineering Design Groups. He is also responsible for the geotechnical designs of several hydroelectric power plants, subways, highways etc., including major underground works (since 1990).



Daniele Peila (Politecnico di Torino)>> Professor of "Tunnel Construction", Director of the Post-graduate Master Course on "Tunnelling and Tunnel Boring Machines" endorsed by ITA-AITES and Director of the Laboratory "Tunnelling and Underground Space", at the Politecnico di Torino, Faculty of Engineering. As engineer Daniele Peila is specialized in tunnelling (conventional and mechanized), EPB soil conditioning, mining, rock engineering, soil and rock improvement and rock-fall protection techniques and responsible of many university research projects in these sectors. Daniele Peila is Vice president of ITA Executive Council and member of the Board of the Italian Tunnelling Association.



Ruth Gunlaug Haug (Leonhard Nilsen & Sønner (LNS)) >> Ruth Gunlaug Haug is a Project Director of the Norwegian contractor Leonhard Nilsen & Sønner (LNS), Past President, board member and Member of Honour of the Norwegian Tunnelling Society.

Ruth Haug has spent 20 years with the Norwegian Road Administration, mainly with tunneling projects in urban areas. She was a Director in the Norwegian Road Authority in charge of Department of tunneling and geotechnical works from 2003-2011. She is a member of the ITA-AITES Executive Council.



Elena Chiriotti (SYSTRA) >> Director of the Tunneling and Underground Works Department and Group Leader in charge of the Tunnel Product for SYSTRA. Elena Chiriotti has over 20 years of professional experience.

Recent projects on which Mrs. Chiriotti has worked include: Hanoi metro; Cairo metro; Bucharest Metro Line 5; Tbilisi Metro; Copenhagen metro (Cityringen); Makkah Metro; Greater Paris Metro Line; the validation studies of the railway tunnel under the Strait of Gibraltar, currently the most challenging tunnel project planned in the world.



Kah Fai Lee (Normet)>> Kah Fai Lee started to work as a tunnel shift engineer on a Lovat EPB TBM on a Metro Project in Singapore in after graduating from Nanyang Technological University, Singapore in 1998. Since he has been involved in several Mining and tunneling projects around the world, with particular interests in TBM projects. He is a certified Efnarc Sprayed Concrete Nozzleman examiner.

Eric Leca (SYSTRA)>> Eric Leca is CTO of the SYSTRA Group, in charge of all technical divisions for Infrastructure, Systems and Operation (750 staff), with involvement in all major projects of the Group, in France and internationally. Over his career, he has been involved in numerous tunnel projects - both at the design & construction stage and during operation. He is currently a Member of the ITA-AITES Executive Council.

Detailed information of the following lecturers were not available at the time of printing:

Messrs **Ooi Lean Hock** and **Gusztáv Klados**. Please, check with the organizer during the training session.