Enlightened Underground is organised by:
the Centrum Ondergronds Bouwen (COB) [Netherlands Centre for Underground Construction] in Gouda.
The event is supported by:
ECTP – European Construction Technology Platform, Focus Area Underground Construction
KIVI NIRIA TTOW – Tunnel Technology and Underground Works Department
of the Royal Institution of Engineers in the Netherlands KIVI-NIRIA
ITA - AITES – International Tunnelling and Underground Space Association

For more information please contact
COB
Büchnerweg 1
2803 GR Gouda, the Netherlands
T: +31(0)182 - 540 660
E-mail: info@cob.nl
www.cob.nl

Register now at: www.thinkdeep.nl

Programme

Underground Space Challenges in Urban Development
International Congress
Amsterdam
28 & 29 January 2008

Register now at: www.thinkdeep.nl
<table>
<thead>
<tr>
<th>27 01 2008 Meetings</th>
<th>28 01 2008 International Congress</th>
<th>29 01 2008 International Congress</th>
<th>30 01 2008 Site Visits</th>
<th>31 01 2008 National Underground Space Day*</th>
</tr>
</thead>
<tbody>
<tr>
<td>09.00</td>
<td>Meetings</td>
<td>International Congress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.30</td>
<td>coffee/tea break</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.00</td>
<td>Session A: The Challenge for Planners</td>
<td>Zuid Holland Underground Transit by dr. F.D. van der Hoeven MSc</td>
<td>Session D: Tunnelling in Urban Environments: Case Studies</td>
<td>Working visits to: Amsterdam – The Hague – Arnhem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Zuidas Amsterdam by E. Brinkman MA (under consideration)</td>
<td>– Interaction between Design and Urban Surroundings by prof. J.W. Bosch MSc</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– The Urban Underground in the Deep City Project - ‘for construction but not only’ by prof. dr. A. Parriaux</td>
<td>– Results Hubertus Tunnel Mark a New Tunnel Era in the Netherlands by P.P.M.K. Janssen MSc</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Underground Solutions for Streetlevel Ambitions by S. van Bodegraven BSc</td>
<td>– Multi Purpose Deep Tunnel by A.L. Lanti M.Eng MSc</td>
<td></td>
</tr>
<tr>
<td>12.30</td>
<td>lunch break</td>
<td></td>
<td>Session E: Urban Underground Facilities: challenging the future</td>
<td>Discussions on the applicability of the results of the international congress to the Dutch situation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Utilities in the Netherlands – research projects by C.H. Schapman MA</td>
<td>– The SMART Project – A Unique Dual Purpose Solution for the City of Kuala Lumpur, Malaysia by K.J. Abraham MSc</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Utilities in Germany (under consideration)</td>
<td>– Airquality in the Netherlands by J.W. Huijben MSc (under consideration)</td>
<td></td>
</tr>
<tr>
<td>16.00</td>
<td>Session C: Successful Urban Underground Projects</td>
<td>The Underground Faculty of Theatre and Dance in Arnhem by prof. H.J. Henket MSc and prof. F. van Herwijnen MSc</td>
<td>Session G: Safe &amp; Secure Underground Space Use</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>– Worldwide Use of Underground Space - Solutions to Urban Challenges by prof. M. Thewes PhD MSc</td>
<td>– ITA-COSUF by F. Amberg MSc</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>– Tunnel Fire Safety: Results of the Largest European Research Project UPTUN by dr. C. Both MSc</td>
<td></td>
</tr>
<tr>
<td>18.00</td>
<td>Welcoming reception</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.00</td>
<td>Opening Underground Space Pub</td>
<td>Underground Space Pub</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dirk Coppens - Amsterdam Underground Festival</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.00</td>
<td>Canal Cruise Amsterdam by Night</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Register now at: www.thinkdeep.nl
14.00 Session B

Services & Utilities Tunnelling: Case Studies & Research

Trenchless Technologies and their Impact on Urban Utility Systems

Prof. R.L. Sterling, Director, Trenchless Technology Center, Louisiana Tech University

In the past two to three decades, a series of underground utility construction and repair technologies have emerged that are grouped under the term trenchless technology. The term is used to describe those technologies that allow the installation, replacement or repair of underground utilities or conduits without the need for the excavation of a continuous trench from the surface. While the term trenchless certainly also applies to larger bored tunnels, the term is typically used to refer to urban-utility-scale-technologies rather than rail, metro, or road tunnel installations. The development of these technologies provides new solutions for installing and maintaining urban utility systems, but it also introduces new issues into the planning, design and operation of these systems. These new issues have an impact on the engineers who plan and design the systems, an impact on the conduct of site investigations for utility work, and an impact on the long-term arrangements of urban utility systems as the techniques are used more extensively.

The Public Utility Tunnel Mahlerlaan, Amsterdam

A new Approach to the Use of Urban Underground Space

F.M. Taselaar MA, Hompe en Taselaar

A more efficient use of space in densely-populated areas and the desire for a high-quality city environment requires an innovative approach to accommodate the rapidly-increasing amount of cables and pipelines for public utility networks in the city. The Public Utility Tunnel Mahlerlaan in Amsterdam is one such approach. The design, construction and commissioning of the tunnel will be discussed.
Underground Landscape:
The Urbanism & Infrastructure of Toronto's Downtown Pedestrian Network
Prof. P. Bélanger, Centre for Landscape Research, Faculty of Architecture, Landscape & Design, University of Toronto

Beneath the streets of Toronto lies a sprawling labyrinth that serves over 100,000 people every day. One of the city’s most under-appreciated urban spaces, Toronto’s underground is remarkably the largest underground shopping complex in the world according to the Guinness Book of World Records with more than 30 kilometres of shopping tunnels and retail nodes. Since the 1970s, this underground system has grown and multiplied beneath the surface of the city with relatively little intervention from city planners. This presentation discusses the development pattern of the underground as a network and the future it holds as an important public infrastructure.

Worldwide Use of Underground Space
Solutions to Urban Challenges
Prof. M. Thewes PhD MSc, Head of the Institute for Tunnelling, Pipeline Technology and Construction Management, Department of Civil Engineering, Ruhr-University Bochum, Germany

The presentation highlights underground solutions to solve urban challenges. Key elements in the decision-making process are discussed and outstanding international case examples will be presented.
Session E
Urban Underground Facilities: challenging the future

AMFORA - Alternative Multifunctional Underground Space Amsterdam
The City beneath the City
B.K.J. Obladen BSc, Strukton and prof. M.E. Zwarts MSc, Founder and Board Member of Zwarts & Jansma architects

AMFORA presents the opportunity of realising the much desired improvement of the living environment, without compromising mobility demands. Through a system of underground spaces with entrances and exits at several points along the A10 ring road, different functions can be relocated below ground. Examples are shops, parking spaces, sports facilities, cinemas, supply facilities, archives, bomb shelters, cables and ducts, personnel transport, there are many possibilities. AMFORA is as it were a “City beneath the City”. And by relocating different functions underground, opportunities emerge for spatial development on the surface level. When special attention is given to the energy concept and environmental impact, AMFORA forms an integral and sustainable solution for the challenges that the city of Amsterdam faces. AMFORA is a solution with far-reaching potentials, highly innovative, a sustainable solution for the living environment in Amsterdam, and not to say the least, technical and economical feasible. It brings back some of the glory days of the experience of the city of Amsterdam, without compromising the mobility demands of this era.

Recent Underground Space Development in Japan
Prof. T. Hanamura, Okayama University, The Graduate School of Environmental Science, Division of Social Engineering and Environmental Management, Division of Environmental Design

This presentation addresses recent underground space development in Japan, mainly focusing on urban underground infrastructures such as the underground metropolitan expressway (road) in Tokyo. This project is now under construction – one section will open in December 2007. Or the outer flood discharge tunnels in the metropolitan area of Tokyo completed a couple of years ago, and other projects such as multi-functioning utilities tunnels, subway constructions, etc.

US Perspective: Challenges of Underground Facilities in Urban Areas
A.E. Elioff, Senior Professional Associate Project Management, Tunnel Engineering, PB Americas, Inc. and C. Laughton, Project Manager for Underground Design and Construction at Fermi National Accelerator Laboratory

The presentation will illustrate challenges to underground construction (in the USA, urban areas) using illustrations from both successful and unsuccessful underground projects – and the impact of these on current and planned underground construction. Projects are expected to include CSO/Water tunnels, NUMI and DUESL Projects, WAMATA extension, (Virginia) Alaska Way Viaduct - Seattle, Los Angeles Metro System and Central Artery in Boston.

Session D
Tunnelling in Urban Environments: Case Studies

Prof. J.W. Bosch Msc, Deputy Managing Director, Project Office North South Metro Line Amsterdam and Chair of Underground Space Technology, Delft University of Technology

Planning and building of new major public transport infrastructure in a densely built-up area such as the historical inner city of Amsterdam is a complex matter. The design and the construction technology are greatly influenced by the restrictions posed by the urban surroundings.

Results Hubertus Tunnel Mark a New Tunnel Era in the Netherlands
P.P.M.K. Janssen MSc, Project Organisation Hubertus Tunnel

In The Hague the Hubertus Tunnel has nearly reached completion. This twin-tube bored tunnel, 1600 metres in length, with a diameter of 10 metres, is the first bored tunnel in the Netherlands which actually runs under buildings. The results in terms of settlements and vibrations give a lot of confidence for further tunnels in our weak soil. The brick buildings demonstrated a settlement of less than 5 mm, and no cracks occurred. The next era for tunnel-boring in the Netherlands has begun.

Multi Purpose Deep Tunnel (MPDT), an Integrated Solution for Flood Control, Water Supply, Waste Water, Road Tunnel and Public Utilities in the Jakarta Megapolitan City
A.L. Lanti M.Eng MSc, Chairman of the Jakarta Water Supply Regulatory Body

Multi Purpose Deep Tunnel System (MPDT) is an emerging technology in the integrated efforts to mitigate flood, to address urban water resources management, and to reduce traffic congestion in the urban area which can be implemented in a synergic manner. This presentation describes the concept and potential of MPDT system application to solve urban infrastructure challenges for the Metropolitan City of Jakarta.
ITA-COSUF
F. Amberg MSc, Amberg Engineering Ltd, Hagerbach Test Gallery Ltd, Chairman of ITA-COSUF

ITA-COSUF – the committee on operational safety of underground facilities of the international tunneling and underground space association is an international partnership to improve safety and security. It is the Committee’s ambition to contribute to and to promote tunnel safety by fostering innovation, raising awareness and supporting the development of regulations. This is done by 3 Activity Groups (external communication, regulation and best practice, research and development) and workshops addressing issues related to safety and focusing on international research programmes. For further information please refer to the ITA-AITES website.

Tunnel Fire Safety: Results of the Largest European Research Project UPTUN
Dr. C. Both MSc, Technical Director Efectis Nederland BV

Last year the largest European research project in the area of tunnel safety was completed. This project, named UPTUN, was the closure of seven research projects in this area, initiated by the European Commission as a result of the famous tunnel fires over the past twelve months. The results of the UPTUN research are valuable for a wide public, varying from constructors to suppliers to tunnel operators and emergency response teams.

The SMART Project – A Unique Dual Purpose Solution for the City of Kuala Lumpur, Malaysia
K.J. Abraham MSc, Project Director, Kuala Lumpur Flood Mitigation Project, Department of Irrigation and Drainage, Malaysia Ministry of Natural Resources and Environment, Government of Malaysia.

The SMART Project is a unique and innovative project conceived to alleviate flooding in the City Centre of Kuala Lumpur whilst helping to reduce traffic congestion in the city. The paper will elaborate the objectives of this project and the challenges faced in the construction of this dual-purpose 11.8m tunnel, 9.7 km long, under the city of Kuala Lumpur which now has been completed.

Fire Safety Engineering for Deep Underground Metro System
A.J.M. Snel MSc, Senior Consultant Tunnel Safety, Witteveen+Bos consulting engineers and Project Office North/South Line Amsterdam

An integrated safety approach has been developed for the new underground North/South metro line based on the “safe haven” concept. A functional fire safety design for the stations was hereby an essential topic. The depth of the (multi level) platforms and spatial constraints demand a solution whereby safe evacuation will be supported by escalators and an emergency ventilation system. For the main Central Station transport hub, special attention was given to the multiple and complex safety interfaces with other public transit areas, not only for the final state but also during the ten year construction period.

The Climate Change Challenge
The SMART Project – A Unique Dual Purpose Solution for the City of Kuala Lumpur, Malaysia
K.J. Abraham MSc, Project Director, Kuala Lumpur Flood Mitigation Project, Department of Irrigation and Drainage, Malaysia Ministry of Natural Resources and Environment, Government of Malaysia.

The SMART Project is a unique and innovative project conceived to alleviate flooding in the City Centre of Kuala Lumpur whilst helping to reduce traffic congestion in the city. The paper will elaborate the objectives of this project and the challenges faced in the construction of this dual-purpose 11.8m tunnel, 9.7 km long, under the city of Kuala Lumpur which now has been completed.

Safe & Secure Underground Space Use
Fire Safety Engineering for Deep Underground Metro System
A.J.M. Snel MSc, Senior Consultant Tunnel Safety, Witteveen+Bos consulting engineers and Project Office North/South Line Amsterdam

An integrated safety approach has been developed for the new underground North/South metro line based on the “safe haven” concept. A functional fire safety design for the stations was hereby an essential topic. The depth of the (multi level) platforms and spatial constraints demand a solution whereby safe evacuation will be supported by escalators and an emergency ventilation system. For the main Central Station transport hub, special attention was given to the multiple and complex safety interfaces with other public transit areas, not only for the final state but also during the ten year construction period.

The SMART Project – A Unique Dual Purpose Solution for the City of Kuala Lumpur, Malaysia
K.J. Abraham MSc, Project Director, Kuala Lumpur Flood Mitigation Project, Department of Irrigation and Drainage, Malaysia Ministry of Natural Resources and Environment, Government of Malaysia.

The SMART Project is a unique and innovative project conceived to alleviate flooding in the City Centre of Kuala Lumpur whilst helping to reduce traffic congestion in the city. The paper will elaborate the objectives of this project and the challenges faced in the construction of this dual-purpose 11.8m tunnel, 9.7 km long, under the city of Kuala Lumpur which now has been completed.

Addendum
The Climate Change Challenge
The SMART Project – A Unique Dual Purpose Solution for the City of Kuala Lumpur, Malaysia
K.J. Abraham MSc, Project Director, Kuala Lumpur Flood Mitigation Project, Department of Irrigation and Drainage, Malaysia Ministry of Natural Resources and Environment, Government of Malaysia.

The SMART Project is a unique and innovative project conceived to alleviate flooding in the City Centre of Kuala Lumpur whilst helping to reduce traffic congestion in the city. The paper will elaborate the objectives of this project and the challenges faced in the construction of this dual-purpose 11.8m tunnel, 9.7 km long, under the city of Kuala Lumpur which now has been completed.

Fire Safety Engineering for Deep Underground Metro System
A.J.M. Snel MSc, Senior Consultant Tunnel Safety, Witteveen+Bos consulting engineers and Project Office North/South Line Amsterdam

An integrated safety approach has been developed for the new underground North/South metro line based on the “safe haven” concept. A functional fire safety design for the stations was hereby an essential topic. The depth of the (multi level) platforms and spatial constraints demand a solution whereby safe evacuation will be supported by escalators and an emergency ventilation system. For the main Central Station transport hub, special attention was given to the multiple and complex safety interfaces with other public transit areas, not only for the final state but also during the ten year construction period.

The SMART Project – A Unique Dual Purpose Solution for the City of Kuala Lumpur, Malaysia
K.J. Abraham MSc, Project Director, Kuala Lumpur Flood Mitigation Project, Department of Irrigation and Drainage, Malaysia Ministry of Natural Resources and Environment, Government of Malaysia.

The SMART Project is a unique and innovative project conceived to alleviate flooding in the City Centre of Kuala Lumpur whilst helping to reduce traffic congestion in the city. The paper will elaborate the objectives of this project and the challenges faced in the construction of this dual-purpose 11.8m tunnel, 9.7 km long, under the city of Kuala Lumpur which now has been completed.

Fire Safety Engineering for Deep Underground Metro System
A.J.M. Snel MSc, Senior Consultant Tunnel Safety, Witteveen+Bos consulting engineers and Project Office North/South Line Amsterdam

An integrated safety approach has been developed for the new underground North/South metro line based on the “safe haven” concept. A functional fire safety design for the stations was hereby an essential topic. The depth of the (multi level) platforms and spatial constraints demand a solution whereby safe evacuation will be supported by escalators and an emergency ventilation system. For the main Central Station transport hub, special attention was given to the multiple and complex safety interfaces with other public transit areas, not only for the final state but also during the ten year construction period.