

Registration Fee

SRMEG, ASG* & EAS Members** : \$600.00
*ASG (Austrian Society for Geomechanics)**EAS (Engineering Alumni Singapore)

Non-SRMEG Members : \$650.00
(Registration fee covers workshop handouts, tea breaks and lunches)

Prof / Dr / Mr / Mrs / Ms: Title and Full Name (underline Surname / Family Name):		Membership No: SRMEG/ASG/EAS
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Method of Payment

- By bank Draft / Cheque in Singapore Dollars drawn on a bank in Singapore and made payable to:
“**Society for Rock Mechanics & Engineering Geology**”

Bank Draft/Cheque Number: _____ Issuing Bank: _____

- By Credit Card. Please deduct the above amount from my (card Type):

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Please send the registration form and payment to: SRMEG
1 Liang Seah Street, #02-12 Liang Seah Place, Singapore 189022
Tel: +65 6336 2328, Fax: +65 63362583
Email: srmeg@cma.sg

Programme Overview

**Day 1 – 11 Nov 2010, Thursday
0830-1730**

Registration
Welcome Speech by President of Society for Rock Mechanics & Engineering Geology, Zhou Yingxin
Opening Remarks by President of Austrian Society for Geomechanics, Wulf Schubert
Development and Background of NATM, Wulf Schubert
Strategy and Methods for Investigation for Tunnel Design, Alfred Fasching
Structured Process for Excavation and Support Design – The Austrian Guideline for geotechnical design, Wulf Schubert
Criteria for The Layout of Underground Structures, Robert Galler
Site Organisation and Geotechnical Safety Management Using The Example of The 32,9 km Long Koralm Tunnel, Gerhard Harer
Discussion
Concept of Austrian Construction Contract, Robert Galler
Purpose and Methods of Monitoring, Wulf Schubert
Discussion

**Day 2 – 12 Nov 2010, Friday
0900-1715**

Interpretation of displacement monitoring data, Karl Grossauer
Geological tasks during construction, Kurt Klima
Design and construction of large tunnels in soil and faulted rock in Austria and Slovenia, Josef Daller
Discussion
Design and construction of railway tunnels in soil and hard rock in western Austria, Robert Galler
Construction of Alpine tunnels– technical and contractual aspects, Helmut Westermayr
Discussion
Application of the NATM at the Delhi Metro, Johann Brandl
NATM applications in Singapore ground conditions, Oskar Sigl
Discussion & End of Workshop

TUNNELLING IN DIFFICULT GROUND CONDITIONS

An International NATM Workshop
11-12 November 2010
Traders Hotel, Singapore

Website : www.srmeg.org.sg



Organized by:



Society for Rock Mechanics
& Engineering Geology (Singapore)



Austrian Society for Geomechanics

Introduction

This workshop aims to present and discuss systematically the New Austrian Method of Tunnelling (NATM), as it is practised in Austria and worldwide. The main theme will be "Tunnelling in difficult ground conditions." With the expected acceleration of underground space development in Singapore and many other countries, it is important for regulators, planners, developers, engineers and contractors to have a comprehensive understanding of what NATM encompasses as a tunnelling method. In this workshop, we bring in a panel of distinguished experts and practitioners to share with us their knowledge and experience in the essential aspects of NATM.

Workshop Topics

- Historical and Theoretical Background of NATM
- Investigation and Design Methods and Standards
- Excavation and Support Strategies
- Monitoring and Data Interpretation
- Project Management, Contractual Practice and Risk Management
- Applications & Case Studies



The Traders Hotel is located in the new fashionable area of Orchard Spring in Singapore. From here it's just a three-minute stroll to the main shopping, entertainment and nightlife district on Orchard Road.



About the Speakers



Johann BRANDL, Geoconsult ZT GmbH – Austria, graduated from the Mining University of Leoben in 1991 in Mining and Tunnelling. After working as Teaching Assistant at the Institute for Geomechanics and Tunnelling for five years he received his PhD in 1995. Since 1996 he is working for GEOCONSULT and has been involved and responsible for several large national and international infrastructure projects, such as the Bolu Tunnel Project in Turkey, the Brenner Base Tunnel in Austria, various Metro Projects in India, Hungary and Iran as well as hydropower, railway and motorway projects. Johann was one of the responsible persons to introduce NATM in soft ground to the Indian Market in 2003 during the design and construction of the first underground Metro Line in New Delhi.



Joseph DALLER, iC Consultant, Vienna, graduated as civil engineer from the Graz University of Technology. Starting with 1978 he worked with GEOCONSULT, first in the head office in Salzburg, and from 1984 to 1991 as project manager and head of the branch office in Taiwan. There he was involved in spectacular projects with large caverns in poor ground, as well as road and railway tunnels. From 1992 to 1995 he was managing director of the GEOCONSULT Vienna office. Since 1995 he is partner and managing director of iC Consultant, and head of the tunnelling division. Josef has extensive experience in all kinds of underground projects. So far he has worked on more than 100 tunnel projects. Some of the recent highlights are the railway tunnels Lainz and Wienerwald in Vienna, the Pfändertunnel in western Austria, as well as the Semmering Base tunnel. He is not only directing and managing projects, but still as a real engineer familiar with all project details.



Alfred FASCHING, 3G Gruppe Geotechnik Graz ZT GmbH, graduated in Engineering Geology from the Graz Karl Franzens University in 1987 (MSc). Following a 9 year employment in an international consulting company, research assistant at the Institute for Rock Mechanics and Tunnelling, Graz University of Technology, graduated PhD in 2000. More than 20 years of international experience in engineering geological and geotechnical consulting services for underground construction works. Since 15 years he is professional engineer and since 10 years managing director of 3G Gruppe Geotechnik Graz ZT GmbH, an international consulting company. Alfred has worked for many different kinds of projects, such as infrastructure, hydro power, irrigation, mining, underground storage in all different kinds of geological and climatic environment, such as the Andes, Himalayas, Alps, the deserts of Saudi Arabia and Iran as well in large cities such as Seoul, Athens, and Taipei. He has experience in the design of underground investigation programs, ground modeling, rock mass classification and consulting services during construction for projects in soft ground as well as hard, squeezing and bursting rock. Up to now Alfred has been involved in Tunnels projects with a length of individual tunnels up to 62 km and cavern projects with cross sections up to 2000 m². He is contributing member to the ITA – Working Group 19 – Conventional Tunnelling, NATM – The Austrian Methodology of Conventional Tunnelling, and Guideline for the Geotechnical Design of Underground Construction with Conventional Excavation of the Austrian Society of Geomechanics.



Robert GALLER, Mining University Leoben, graduated from the Mining University of Leoben in 1993 with a Dipl.-Ing. equivalent to MSc. in Mining and Tunnelling. From 1993 to 1997 he prepared his doctoral thesis, dealing with the geotechnical aspects of gripper action of open tunnel boring machines. From 1997 to 2007 Robert has been working for GEOCONSULT on projects like the High Speed Rail (HSR), Cologne – Frankfurt in Germany – a railway line with several tunnel projects, characterized by very low overburden mainly in soil and strongly weathered rock formations. After being the responsible geotechnical engineer at the HSR Ebelsfeld – Erfurt, Tunnel Sandberg, Germany, he was involved in the design for Tunnel La Linea, Colombia and the Metro Porto, Portugal. Then he served as project leader for the tender design of several tunnel projects along the northern access route to the Brenner Base Tunnel. From the end of 2004 to mid 2007 Robert served as project manager of an international JV for the Brenner Base Tunnel, length of about 57km including all fields of tunnel design from tunnel safety, aerodynamics, electrical to civil- and environmental design. Since mid 2007 Robert is head of the chair of Subsurface Engineering at the Mining University of Leoben. Since 2009 together with the Graz University of Technology a 4-semester's course for NATM – Engineering is offered. Robert is member of the board of the Austrian Society for Geomechanics, the representative of ITA Austria in the General Assembly of ITA and Vice Animateur of ITA's Working Group Nr. 19 – Conventional Tunnelling.



Karl GROSSAUER, Amberg Engineering, graduated from the University of Technology in Graz with MSc degree 2001, joined a consulting company (3G) and returned to University to prepare his PhD thesis, which he completed in 2009. In the course of his research he has developed new methods for the evaluation and interpretation of displacement monitoring data in tunnelling and established a prototype of an expert system. He has eight years of consulting and design experience in the field of underground construction with focus und tunnelling in difficult ground conditions. He has participated in the geotechnical design of a number of well known and challenging tunnelling projects with high overburden and fault zones. The Semmering Base Tunnel and Koralmtunnel in Austria are just a few of them. During his research period he has done a good seal of geotechnical "online consulting" for various tunnel projects, using his expertise in monitoring data interpretation. His active contribution to research and development in underground engineering is shown in about 25 publications in journals and proceedings as well as presentations at international conferences.



Gerhard HARER, OBB, Austrian Federal Railways, is educated as civil engineer from a technical college, studied Engineering Geology at the Graz University and Graz University of Technology (MSc). He has been working on a number of road and railway tunnels in Austria, Germany, Korea and Turkey in various positions. Since the early 1990ies he is with the Austrian Federal Railways. Currently he is project manager for a new high speed railway line in Austria, including the 32,9 km Koralm tunnel. Gerhard is specialized in Engineering Geology, geological investigation, project management, and environmental impact assessments. He has authored and co-authored more than 30 technical and scientific papers, and is member of several working groups and committees.



Kurt KLIMA, Graz University of Technology, a geologist by education, Kurt finished his studies with the degree of "Dr.phil." at Graz University in 1980. Since 1979 Kurt Klima is occupied at the Institute of Applied Geosciences at Graz University of Technology, since 1992 in the position as Assistant-Professor. Since 1999 he is Professional Engineer and partner in the 3G Gruppe Geotechnik Graz ZT GmbH geotechnical consulting company. The main fields of research are faults and the wide field of rock mass characterisation. Besides the research activities, Kurt Klima is actively involved in many of tunnelling and hydropower projects in Austria and abroad (e.g. in Bolivia, Colombia, Turkey). He has extended experience in engineering geological field and underground investigation



Wulf SCHUBERT, Graz University of Technology, a civil engineer, and graduated from Graz University of Technology. He received his PhD from the Mining University Leoben. He has been working on a large number of projects, mainly tunnels, caverns, mines, and slopes around the world as designer, Engineer, and consultant. Since 1992 he is head of the Institute for Rock Mechanics and Tunnelling at the Graz University of Technology. The focus of his research is on tunnelling in poor and faulted ground, ground characterization, and monitoring. He has authored more than 100 papers, and supervised around 90 Master and PhD theses. Wulf has held a number of short courses on tunnelling in many countries. A post graduate course on NATM Engineering was recently started in co-operation with the Mining University Leoben. He is member of several working groups in the ITA and ISRM, and the Austrian Society for Geomechanics. Currently he is president of this society. As partner in the international consulting company 3G Gruppe Geotechnik Graz he is active in consulting on national and international projects.



Oskar SIGL, Geoconsult Asia Singapore, graduated 1985 from Technical University of Graz, Austria in Civil Engineering specializing in geotechnics and soil mechanics. In 1991, after working as Teaching Assistant at the Institute for Geomechanics and Tunnelling for five years he achieved the PhD in mining engineering at the Mining University of Leoben, Austria. Dr. Sigl was involved in the design of major underground structures in a great number of projects, such as subway tunnels, railway and road tunnels, underground storage schemes and caverns. With more than 23 years of tunneling experience, these projects cover a large variety of different ground conditions and construction methods ranging from hard rock to soft clay and from conventional drill and blast or Cut & Cover excavations to the use of tunnel boring machines and road headers.



Helmut WESTERMAYR, Alpine BeMo Tunnelling, Innsbruck, graduated from the Technical College for Civil Engineering in Innsbruck. He has been working in the field of underground construction and tunnelling most of his life. Since 1973 he is working for ALPINE BeMo Tunnelling GmbH (formerly "Beton- und Monierbau Gesellschaft m.b.H.") concentrating on the tunnelling business. He was involved in many huge tunnelling projects such as Karawanken Tunnel, Oswaldiberg Tunnel, Pfaender Tunnel, Hydro-powerplant Kops II, Strenger Tunnel, Lainzer Tunnel in Austria and High Speed Railway Tunnel Cologne-Rhine/Main in Germany. Since 2009 he is also responsible for the tunnelling projects of ALPINE in Asia and was appointed as Managing Director in the year 2007.