THE
AUSTRIAN SOCIETY
FOR GEOMECHANICS

is honoured to invite you to the 67th Geomechanics Colloquium 2018 (50 years Austrian Society for Geomechanics) on the 11th to 13th of October 2018 at the Congress Center „Salzburg Congress“, Auerspergstrasse 6, Salzburg, Austria.

Session topics:

» Special Measures for Geotechnical Problems – Lessons Learned
» Relevant Parameters for the selection of TBMs
» Model Selection for Design and Construction
» New Developments in Tunnel Supports

Publisher and responsible for the content: Austrian Society for Geomechanics / Salzburg, Austria
Producer: Santos, ÖGG Salzburg, Austria; Kluckner, Graz University of Technology, Austria
Previous to the Colloquium the 11th AUSTRIAN TUNNEL DAY with the topics

» Special challenges at large projects
» Important standards for tunnelling
» Innovation and Tunnelling 4.0 – The future of tunnelling

is scheduled on the 10th of October 2018
AGENDA
THURSDAY, 11TH OCT. 2018

WELCOME
08:30 a.m.
Welcome by W. Schubert, President of the Austrian Society for Geomechanics

SPEECH 50 YEARS ÖGG FROM GEORG M. VAVROVSKY
08:45 a.m.

LAUDATIO FRANZ PACHER FROM ANDREAS LEITNER

SPECIAL MEASURES FOR GEOTECHNICAL PROBLEMS – LESSONS LEARNED
09:40 a.m.

Chair
W. Stipek PORR Bau GmbH (A)
R. Hödl ÖBB-Infrastruktur AG (A)

Tunneling at the polar circle – Hard rock in Norway
N. Hörlein PORR Bau GmbH (A)

Tunnel T26 along Ankara – Istanbul high speed rail route, as an example for difficult geological conditions
M. Incecik Istanbul Technical University (TR)
E. Posluk TCDD (TR)
Engelberg base tunnel, improvement of the inner lining through a major adaption of the load transfer in squeezing rock

J. Benedikt  Amberg Engineering AG (CH)
R. Buba    SSF Ingenieure (D)
S. Berger  Amberg Engineering AG (CH)

COFFEE BREAK (20 min)
11:10 a.m.

Joint efforts to prevent a major accident after failure of a vacuum well in a deep construction pit

J. Meier   Implenia Spezialtiefbau GmbH (D)
S. Böhm    Implenia Spezialtiefbau GmbH (D)

Untersammelsdorf Tunnel – Challenges and Special Measures during Tunneling in Lacustrine Clay

A. Bahr   Baresel GmbH (D)
S. Höser  ILF Consulting Engineers Austria GmbH (A)
H. Wagner ÖBB-Infrastruktur AG (A)
M. Mehlführer BGG Consult Dr. Peter Waibel ZT GmbH (A)
T. Herzeg ÖBB-Infrastruktur AG (A)

Semmering Base Tunnel – Design and construction of the shaft head caverns under difficult conditions

G. Wieland Amberg Engineering AG (CH)
K. Prall   Amberg Engineering AG (A)
G. Lenz    iC consulenten ZT GmbH (A)

LUNCH BREAK (60 min)
01:00 p.m.
LEOPOLD MÜLLER AWARD 2018
02:00 p.m.

RELEVANT PARAMETERS FOR THE SELECTION OF TBMs
02:15 p.m.

Chair
D. Bach    IGT - Geotechnik und Tunnelbau ZT GmbH (A)
W. Leitner  G. Hinteregger & Söhne Bauges.m.b.H. (A)

New testing method for the prediction of the dispersion of soil in slurry shield tunneling
T. Weiner    PORR Tunnelbau (D)
M. Thewes    Ruhr Universität Bochum (D)

Selection of a suitable TBM for soft ground tunneling
D. Edelhoff  IMM Maidl & Maidl GmbH & Co. KG (D)
E. Humme    IMM Maidl & Maidl GmbH & Co. KG (D)

Experience from TBM excavation in hard rock obtained in the Follo Line Project
J. Gollegger  Bane Nor (NO)

COFFEE BREAK (30 min)
03:45 p.m.

Selection and specification of the tunnel boring machine as a leading fact for achieving the project goals
M. Flora    Herrenknecht AG (D)
P. Teuscher  tce Teuscher Peter GmbH (A)
M. Jäger    Jäger Consult (A)
Intelligent building connects people.

Building with passion and skill. Every project is different and requires individual planning and execution. The skills and dedication of every individual are the decisive factors in a project’s success. For more than 145 years PORR has been synonymous with exceptional competency in every area of the construction business – its expertise, dedication and team spirit always pay off. porr-group.com
The use of machine parameters and operational data as a normative basis for contractual classification for tunnel boring machines in hard rock

D. Bach  IGT - Geotechnik und Tunnelbau ZT GmbH (A)
W. Holzer  BERNARD Ingenieure ZT GmbH (A)
W. Leitner  G. Hinteregger & Söhne Bauges.m.b.H. (A)
N. Radončić  Amberg Engineering (A)

From the geological report to machine advance: tunnel design for the construction lot H41 on the Brenner Base Tunnel

K. Mair am Tinkhof  Amberg Engineering (A)
N. Radončić  Amberg Engineering (A)
R. Insam  Brenner Basistunnel BBT SE (A)
C. Reinhold  Brenner Basistunnel BBT SE (A)
M. Rehbock  Amberg Engineering (A)

CHAMBER CONCERT
07:00 p.m.

The government of the province and the city of Salzburg invite the participants and the accompanying persons to a chamber concert in the SALZBURGER RESIDENZ (Residenzplatz 1), on Thursday evening. The invitation to the chamber concert is attached to the conference documents.
CONGRESS DINNER

After the concert, the Austrian Society for Geomechanics with the kind support of

invites all participants of the colloquium as well as accompanying persons to the restaurant **STIEGLKELLER Salzburg** (Festungsgasse 10, after the fortress cable railway) in order to freely exchange thoughts with friends and gain new ones. The event starts at 7 p.m.
MODEL SELECTION FOR DESIGN AND CONSTRUCTION
09:00 a.m.

Chair
A. Goricki  3G Gruppe Geotechnik Graz ZT GmbH (A)
G. Lenz   iC consulenten ZT GmbH (A)

3D geological modelling – shown at the example of Karawankentunnel project, northern section
S. Cudrigh-Maislinger iC consulenten ZT GmbH (A)

Model adaption to reality from design to construction shown by a quarry
R. Poisel   Vienna University of Technology (A)
A. Preh    Vienna University of Technology (A)
B. Kolenprat Federal Ministry of Labour, Social Affairs, Health and Consumer Protection (A)
A. Barth   Geologie Weixelberger GmbH (A)
J. Höllrigl Vienna University of Technology (A)

Design Strategies for Primary Tunnel Linings
M. Brandtner IGT - Geotechnik und Tunnelbau ZT GmbH (A)
M. Hofmann  Brenner Basistunnel BBT SE (A)
A. Paternesi Freelance Geotechnical Engineer (I)
E. Saurer   Skava Consulting ZT-GmbH, NL Salzburg (A)
H.F. Schweiger Graz University of Technology (A)
H. Walter   Engineer consultant for civil engineering (A)
Semmering Base Tunnel – Geotechnical Models in Design and Construction

G. Lenz       iC consultanten ZT GmbH (A)
A. Poisel      IGT - Geotechnik und Tunnelbau ZT GmbH (A)
M. Brandtner   IGT - Geotechnik und Tunnelbau ZT GmbH (A)
A. Goricki     3G Gruppe Geotechnik Graz ZT GmbH (A)
O.K. Wagner    ÖBB-Infrastruktur AG (A)

Validation of analytical approaches by actual measurement of longitudinal displacement profiles at the Brenner Base Tunnel

B. Schneider-Muntau       University of Innsbruck (A)
C. Reinhold               Brenner Basistunnel BBT SE (A)
T. Cordes                 Brenner Basistunnel BBT SE (A)
I. Bathaeian              University of Innsbruck (A)

— DISCUSSION —

— LUNCH BREAK (60 min) —
11:45 a.m.
NEW DEVELOPMENTS IN TUNNEL SUPPORTS
12:45 p.m.

Chair
B. Moritz  ÖBB-Infrastruktur AG (A)
P. Sellner  3G Gruppe Geotechnik Graz ZT GmbH (A)

Further development of yielding and connecting elements for shotcrete
W. Schubert  Graz University of Technology (A)
S. Brunnegger  Implenia Österreich GmbH (A)
J. Wenger  Graz University of Technology (A)

Tunnel pre-support using pipe umbrella methods: technical developments and their advantages
G. Volkmann  DSI Underground Austria GmbH (A)

Bedding improvement of lining segments using geotextile tubes
M. Henzinger  Graz University of Technology (A)
A. Lange  STRABAG AG (A)
G. Volkmann  DSI Underground Austria GmbH (A)
B. Moritz  ÖBB-Infrastruktur AG (A)
W. Schubert  Graz University of Technology (A)

Development of water-permeable annular gap grout for a single-shell draining segmental lining
C. Thienert  STUVA e. V. (D)
F. Leismann  STUVA e. V. (D)
D. Edelhoff  IMM Maidl & Maidl Beratende Ingenieure GmbH & Co. KG (D)
H. Valentini  IMM Maidl & Maidl Beratende Ingenieure GmbH & Co. KG (D)
N. Hörlein  PORR Bau GmbH (A)
E. Kleen  MC-Bauchemie Müller GmbH & Co. (D)
WE UNITE NATURE AND TECHNOLOGY.

GEOCONSULT ZT GMBH
HOELZLSTRASSE 5
5071 WALS/SALZBURG, AUSTRIA
WWW.GEOCONSULT.COM
EXCURSION
SATURDAY, 13<sup>TH</sup> OCT. 2018
SEMMLERING BASE TUNNEL

Project information

This year, the field trip leads to the Semmering Base Tunnel, a railway tunnel with two 27.3 km long single-track running tunnels, which will connect Gloggnitz in Lower Austria to Mürzzuschlag in Styria. Two of the three tunnel sections, which are under construction, will be visited.

From the portal of tunnel section SBT1.1 in Gloggnitz, two running tunnels are driven via drill and blast since 2015. The section contains the intermediate access point Göstritz, which consists of a 1 km long access tunnel, two 250 m deep shafts and a sophisticated system of caverns. Via this intermediate access, geotechnically challenging rock mass areas will be excavated.

In the middle section SBT2.1, two 400 m deep shafts have been sunken, via which various logistic caverns and the approx. two times 500 m long emergency station have been driven. Beginning from the emergency station, the two running tunnels are constructed using four tunnel drives simultaneously. Towards the west the tunnel is driven approx. 4.3 km by drill and blast and two tunnel boring machines are in operation approx. 8.8 km towards the east.
Preliminary schedule

07:00 a.m.  Departure at the Salzburg Congress Center by bus
10:30 a.m.  Arrival Fröschnitzgraben / Arrival Gloggnitz
10:35 a.m.  Site visit
12:00 noon  Group changes
02:00 p.m.  Departure for lunch together
03:45 p.m.  Return to Salzburg
07:30 p.m.  Expected arrival at the Salzburg Congress Center
A SONG GOES AROUND THE WORLD – 200 YEARS „SILENT NIGHT”

Silent Night, Holy Night – probably the most famous Christmas carol is celebrating its 200th anniversary. First performed on Christmas Eve 1818 in the church of St. Nikola in Oberndorf.

We will follow the footsteps of the origin and distribution of the song into the whole world, composed by Franz Xaver Gruber and texted by Josef Mohr.

First, we visit the birth place of Franz Xaver Gruber, an idyllic village called Hochburg-Ach and visit the F.X. Gruber Museum in the memorial house.

From there, we will walk the Franz Xaver Gruber Peace Path. The carol is carried by “angels wings” from continent to continent (so the intention of the sculptor regarding the sculptures placed there), to bring the message of peace - the birth of the Redeemer - to the world. The visitors can follow this message, find out about the time of Gruber and enjoy the beautiful places and sculptures and find peace themselves.

The next station leads us to Arnsdorf, where we visit the school where Josef Mohr worked as a teacher and today houses a memorial museum.

At last we visit the world-famous Silent-Night-Chapel in Oberndorf, dedicated to the Christmas carol Silent Night, Holy Night and his songwriter Josef Mohr and his composer Franz Xaver Gruber.
Preliminary schedule

08:30 a.m.  Departure at the Salzburg Congress Center
09:30 a.m.  Arrival at Hochburg-Ach – Visit of the Memorial House
10:30 a.m.  Walking the Pease Path
12:00 noon  Lunch
01:30 p.m.  Departure to Arnsdorf
02:00 p.m.  Guided Tour through the School of Arnsdorf
03:00 p.m.  Departure to Oberndorf
03:30 p.m.  Silent-Night-Chapel
04:00 p.m.  Coffee and Cake
05:00 p.m.  Return to Salzburg
05:30 p.m.  Expected arrival at the Salzburg Congress Center
Because success comes from working together. The STRABAG-Group generates an output volume of about € 14 billion and handles more than 12,000 projects a year, making us one of the leading European-based technology groups for construction services. This is made possible by the know-how and dedication of our 73,000 employees. Working together as a team, they realise even the most complex construction projects on schedule and in quality.

www.strabag.com
GENERAL

LANGUAGES

The conference languages at the Tunnel Day and the Geomechanics Colloquium will be German and English. Simultaneous translation will be provided.

TECHNICAL EXHIBITION

Exhibition space and facilities accompanying the conference will be available at the symposium venue. Due to the great demand, interested companies are advised to book early. For further information, please contact the office of the Austrian Society for Geomechanics (salzburg@oegg.at). A list of the current exhibitors can be found on the homepage (www.oegg.at).

REGISTRATION AND PAYMENT

All participants are asked to complete the online registration form which can be found on the homepage of the Austrian Society of Geomechanics. After registration, you will receive an invoice. Please, specify by all means the invoice number as well as the name of the participant on the money transfer voucher.

Please do not send us a multiple application via email, use the online registration form. There you are also able to register several participants at once!

The registration is only valid after payment. You are able to pay by bank transfer or credit card. Following credit cards will be accepted: Visa, Master Card and Diners Club.
GENERAL

The payment has to be in Euro (€) and „free of charge for the beneficiary“.

The registration fee covers participation in the conference, the conference bag, the daily lunch, the congress dinner at Stieglkeller, and the chamber concert. Only persons under the age of 26 years without a regular salary are stated as „Students“ (reduced registration fee). Doctoral students are excluded from the discount.

Your participant card (participation ticket) as well as the conference documents will be handed out directly at the registration desk of the conference center (participant cards will NOT be shipped at all).

CANCELLATION

Please understand that we can only accept a written cancellation. When cancelling before the 1st of October 75 % of the fee will be refunded. If you are unable to attend or cancel later than the above mentioned date, no refund can be granted. The conference documents will be mailed on demand at receipt of payment.

We, however, gladly accept a substitute participant without demanding any additional charges.

ACCOMMODATION

For the conference participants special conditions with hotels in each category are available. Please note that the booking has to be done over the conference organizer. Therefore, please book online on the symposium homepage (www.oegg.at) or use the enclosed form. On the homepage as well as on the attached form a table summarizes all hotels with respective conditions in vicinity of the symposium venue.
GENERAL

PROCEEDINGS

The papers of the Salzburger Geomechanics Colloquia are published by Wilhelm Ernst & Sohn Verlag, Berlin, Germany, in the bi-monthly periodical of the Austrian Society for Geomechanics.

GEOMECHANICS AND TUNNELLING

The journal can be ordered at:

Wilhelm Ernst & Sohn Verlag für Architektur und technische Wissenschaften GmbH & Co. KG
Rotheistraße 21, 10245 Berlin, GERMANY
Tel.: +49 30 47031 200
Fax: +49 30 47031 270
info@ernst-und-sohn.de
www.ernst-und-sohn.de

For members of the Austrian Society for Geomechanics the periodical „Geomechanics and Tunnelling” is free!
A membership can be applied for at

Austrian Society for Geomechanics
Innsbrucker Bundesstraße 67, 5020 Salzburg, AUSTRIA
Tel.: +43 662 875519
Fax: +43 662 886748
or directly at the homepage: www.oegg.at
Take the unique possibility to become a sponsor of the Geomechanics Colloquium 2018 and put your company in perspective! The following tables give an overview on possible sponsorship packages. For details on each package please visit our homepage www.oegg.at or contact the office of the Austrian Society for Geomechanics (salzburg@oegg.at).

### Premium Packages

<table>
<thead>
<tr>
<th>Package</th>
<th>Price (EUR)</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platinum</td>
<td>7,500</td>
<td>available</td>
</tr>
<tr>
<td>Gold</td>
<td>5,000</td>
<td>available</td>
</tr>
<tr>
<td>Silver</td>
<td>2,500</td>
<td>not available</td>
</tr>
<tr>
<td>Congress dinner</td>
<td>5,000</td>
<td>not available</td>
</tr>
<tr>
<td>Lunch (3 days)</td>
<td>5,000</td>
<td>not available</td>
</tr>
</tbody>
</table>

### Supporter Packages

<table>
<thead>
<tr>
<th>Package</th>
<th>Price (EUR)</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullet Point</td>
<td>1,000</td>
<td>not available</td>
</tr>
<tr>
<td>Machine</td>
<td>2,000</td>
<td>not available</td>
</tr>
<tr>
<td>Mannerschnitten</td>
<td>2,000</td>
<td>not available</td>
</tr>
<tr>
<td>Scratchpad</td>
<td>1,500</td>
<td>not available</td>
</tr>
<tr>
<td>Detailed Program</td>
<td>1,500</td>
<td>not available</td>
</tr>
<tr>
<td>Web-Banner</td>
<td>1,000-3,000</td>
<td>available</td>
</tr>
<tr>
<td>Banner</td>
<td>500-1,750</td>
<td>available</td>
</tr>
<tr>
<td>Key Strap</td>
<td>1,500</td>
<td>not available</td>
</tr>
<tr>
<td>Pocket Program</td>
<td>750</td>
<td>available</td>
</tr>
<tr>
<td>Advertising Supplement</td>
<td>500</td>
<td>available</td>
</tr>
</tbody>
</table>
Injektionslösungen von Master Builders Solutions
Ihr Partner für jede Herausforderung

Ihre Vorteile bei MasterRoc MP auf einen Blick:

- **Polyurethan und Polyurea-Silikat Harze**: Schnelles Stoppen von Wasserzutritten und für Wasserabdichtungen, Bodenkonsolidierungen sowie Hohlraumverfüllungen
- **Acrylatharze**: Starke dauerhafte Gele für das Abdichten von Rissen, Sanieren von Beton und Stoppen von Wasserzutritten
- **Mikrozemente**: Schnelles Abbinden – Schneller Zyklus
- **Kolloidales Silica**: Das mineralische Injektionsgut für Eindringen in feinste Risse
GENERAL

68th GEOMECHANICS COLLOQUIUM

The Austrian Society for Geomechanics proudly announces that the 68th Geomechanics Colloquium 2019 will be held from 10th to 11th of October 2019 at the Congress Center in Salzburg.

The topics of this congress you may retrieve from our homepage www.oegg.at or, respectively, they are added to the conference materials of the 67th Geomechanics Colloquium.

LEOPOLD-MÜLLER-AWARD

For excellent doctoral theses with practical relevance in the area of rock mechanics and geological engineering the Austrian Society for Geomechanics awards annually the LEOPOLD-MÜLLER-AWARD.

The Austrian Society for Geomechanics invites to submit doctoral theses that apply a holistic approach - in the spirit of Leopold Müller - to geomechanics and geology and that correspond to the objectives of the Austrian Society for Geomechanics - accompanied by a short evaluation of the thesis by the university institute in question. Applications should be submitted latest by the end of January 2019 online at the homepage of the Austrian Society for Geomechanics (www.oegg.at).

Further information regarding the Leopold-Müller-Award can be retrieved from our homepage: www.oegg.at.
GENERAL

MEMBERSHIP

To become member of the Austrian Society for Geomechanics is worth it!

For the Geomechanics Colloquium, which is taking place every year in October, there are special conference fees for members. Also the bi-monthly periodical of the Austrian Society for Geomechanics „Geomechanics and Tunnelling“ (published in English/German) is included in the membership fees.

Members, taking place at the Geomechanics Colloquium and get the periodical „Geomechanics and Tunnelling“, save costs of more than EUR 150.00!

Register on: www.oegg.at
We would also like to thank our current conference supporters!

*Congress Dinner Exclusive Sponsor*

*Platinum Sponsor*

*Congress Bags Sponsor*

*powered by*

*TPH. waterproofing systems*
Lunch Sponsor

Gold Sponsor

Silver Sponsor

We would also like to thank our current conference supporters!

Pioniere der Bauabdichtung
REGISTRATION FEES

Tunnel Day and Geomechanics Colloquium

Regular participants € 595.-
ÖGG & ISRM members € 515.-
Retired persons € 355.-
Students* € 105.-
Lecturer** free

Registration before 08/01

Regular participants € 645.-
ÖGG & ISRM members € 555.-
Retired persons € 380.-
Students* € 130.-
Lecturer** free

Registration after 08/01

Geomechanics Colloquium only

Regular participants € 430.-
ÖGG & ISRM members € 350.-
Retired persons € 190.-
Students* € 75.-
Lecturer** free

Registration before 08/01

Regular participants € 480.-
ÖGG & ISRM members € 390.-
Retired persons € 215.-
Students* € 100.-
Lecturer** free

Registration after 08/01

Social Program

Sightseeing Program € 80.-
Excursion € 80.-
Tunnel Day’s Dinner: Fortress*** € 45.-
Chamber concert free
Buffet Dinner Stieglkeller (October 11th, 2018) free

* „Students” are persons under 26 years of age, enrolled at a University (without regular salary).
At the online registration a valid study record has to be uploaded.
** Only one person per lecture free.
*** The dinner at the fortress on October 10th is only bookable for participants of the Tunnel Day.
Constructing the future is part of our daily business. The world is constantly changing and therefore we are creating new ways of building - on and below the surface. Every project pushes us forward and our goals are constantly growing. We never let it rest until our good is better than our best and our best is better than the rest.

You as a customer can always rely on our expertise, experience and competence - no matter what you need - a perfect shaft, a high-tech tunnel or a modern building - we are the best partner for you. The requirements are higher than ever before. ÖSTUSTETTIN develops and designs constantly new machines and construction methods to build for the future.

With our team, we find the best solution for your project!

ÖSTU STETTIN

oestu-stettin.at

ÖSTUSTETTIN | Hoch- und Tiefbau GmbH
You don't get a second chance
to make your first impression.

A blast takes place in the blink of an eye. When the dust has settled, it´d better be right. For more than 180 years Austin Powder has been synonymous with exceptional competency in blasting. Austin Powder is producing cartridged and bulk explosives, electronic, electric and non-electric detonators for applications in tunneling, underground mining and quarries. State of the art blasting with in-house designed Underground Units, most modern measurement systems, specific analyzing software and extensive technical blasting support provide you with safety – our most valuable asset. With our knowledge and expertise you can improve your productivity and save time and money.

Learn more at your local Austin Powder website or www.austinpowder.at and office@austinpowder.at or call ++43 (3585) 2251-0
Previous to the Colloquium the **11th AUSTRIAN TUNNEL DAY** with the topics

» *Special challenges at large projects*
» *Important standards for tunnelling*
» *Innovation and Tunnelling 4.0 – The future of tunnelling*

is scheduled on the 10th of October 2018.

Further information on the Austrian Tunnel Day you can find in the enclosed folder of the Austrian Committee of ITA (International Tunnel Association).
THE CRUCIAL STEP AHEAD

To take our clients projects that decisive step forward. For that we are determined to do the best job possible. Covering all relevant aspects in the fields of earth-sciences and civil engineering. With a method of operation based on organised flexibility and technological creativity. And a competent team at work.

CONSULTING ENGINEERS

AUSTRIA: 3G Gruppe Geotechnik Graz ZT GmbH, Triester Str. 478a, A-8055 Seiersberg-Pirka, Austria
Tel.: +43/316/337799, Fax: +43/316/337799-11, e-mail: office@3-g.at, web: www.3-g.at

BRANCH OFFICE VORARLBERG, Hintere Achmühlerstr. 1a, A-6850 Dornbirn, Austria
Tel.: +43/5572/200649, Fax: +43/5572/398577, e-mail: vorarlberg@3-g.at, web: www.3-g.at

CZECH REPUBLIC: 3G Consulting Engineers s.r.o., Na usedlosti 16, CZ-147 00 Praha, CzechRepublic
Tel.: +420/2/41443411, e-mail: info@3-g.cz, web: www.3-g.cz