

## Program

# SHOTCRETE FOR UNDERGROUND SUPPORT XI

**June 07 – 10, 2009**

**Davos Congress Center  
Davos-Platz, Switzerland**

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*International Tunnelling and Underground Space Association (ITA)  
Swiss Tunnelling Society (STS)  
American Shotcrete Association (ASA)  
Norwegian Tunnelling Society (NFF)  
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### *Conference Chair*

**Felix Amberg, M.o.S. ETHZ, SIA  
CEO Amberg Group, President Swiss Tunnelling Society**

### *Conference Co-Chair*

**Knut F. Garshol  
UGC Manager NAFTA Latin America  
BASF Construction Chemicals, LLF**



**Engineering Conferences International**  
32 Broadway, Suite 314 - New York, NY 10004, USA  
Phone: 1 - 212 - 514 - 6760, Fax: 1 - 212 - 514 - 6030  
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The conference chairs and organizers would like to thank the following for their generous support of this conference:



**Sunday, June 07, 2009**

05:00 pm – 06:00 pm	Registration (Cresta Sun Hotel)
06:00 pm – 07:00 pm	Opening Reception (Cresta Sun Hotel)
07:00 pm – 09:00 pm	Dinner (Cresta Sun Hotel)

**NOTES**

- Technical sessions on Monday and Tuesday will be held at the Davos Conference Center.
- Audiotaping, videotaping and photography of presentations are prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Buses on Wednesday to the Hagerbach Test Gallery, Flums, Switzerland will leave at 8:15 am from the Cresta Sun Hotel.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

**Monday, June 08, 2009**

07:30 am – 08:45 am

Breakfast (at your hotel)

**Technical Session**

Session Chair: Felix Amberg, Switzerland

Christopher Laughton, Fermi National Accelerator Laboratory, USA  
RECENT EXPERIENCE USING SHOTCRETE TO LINE  
UNDERGROUND LABORATORY FACILITIES

Knut Garshol, BASF UGC; Switzerland  
COST EFFICIENT WATERPROOF TUNNEL LININGS

10:30 am – 11:00 am

Coffee Break

11:00 am – 12:00 pm

**Technical Session**

Session Chair: Felix Amberg, Switzerland

Clifford MacDonald, Forta Corporation, USA  
CASE HISTORIES USING SYNTHETIC FIBER REINFORCED  
CONCRETE

Stefan Bernard, TSE Pty Ltd, Australia  
EARLY-AGE RE-ENTRY UNDER FRESH FIBRE REINFORCED  
SHOTCRETE

12:00 pm – 02:00 pm

Lunch (Cresta Sun Hotel)

02:00 pm – 05:30 pm

**Technical Session**

Session Chair: H. Sander, Austria

E.C. Morton, Western Australian School of Mines, Australia  
DETERMINATION OF ENERGY ABSORPTION CAPABILITIES OF  
LARGE SCALE SHOTCRETE PANELS

Hla Aye Saw, CRC Mining, WA School of Mines, Curtin University of  
Technology, Australia  
NON-LINEAR, ELASTIC - PLASTIC RESPONSE OF STEEL FIBRE  
REINFORCED SHOTCRETE TO UNIAXIAL AND TRIAXIAL  
COMPRESSION TESTING

Benoit de Rivaz, Bekaert Company, France  
TEST PROCEDURE FOR SPRAYED CONCRETE

B. Moritz et al, Mining University of Leoben, Austria  
YET ANOTHER WAY ON EVALUATING STRESSES IN A SHOTCRETE  
LINING

07:00 pm – 07:30 pm

Social Hour (Cresta Sun Hotel)

07:30 pm – 09:00 pm

Dinner (Cresta Sun Hotel)

**Tuesday June 09, 2009**

07:30 am – 09:00 am

Breakfast (at your hotel)

09:00 am – 10:30 am

**Technical Session**

Session Chair: Knut Garshol, USA

Claude Resse, Consultant, France

DESIGNING THE SPRAYED CONCRETE TO REPAIR THE TRANSMANCHE LINK (TML) AFTER THE 2008 FIRE

Ludger Speier, Zerna Ingenieure GmbH, Germany

SHOTCRETE IN TUNNELLING IN FROZEN GROUND

Tarcisio Celestino, University of Sao Paulo, Brazil; Atsumu Ishida,

DENKA (Denki Kagaku Kogyo K.K.), Japan

ACTIVITIES OF THE ITA WORKING GROUP 12, SPRAYED SHOTCRETE USE

10:30 am – 11:00 am

Coffee Break

11:00 am – 12:00 pm

**Technical Session**

Session Chair: Knut Garshol, USA

Rudi Podjadtke, Bochumer Eisenhütte Heintzmann GmbH, Germany

DEVELOPMENT AND APPLICATION OF STRESS CONTROLLERS – SYSTEM HONEYCOMB - IN MODERN TUNNELLING

Robert Galler et al., Mining University of Leoben, Austria

EXPERIENCES WITH POLYMER-MODIFIED SHOTCRETE

Stefan Bernard, TSE P/L, Australia

DESIGN OF FIBRE REINFORCE SHOTCRETE LININGS WITH MACRO-SYNTHETIC FIBRES

12:00 pm – 02:00 pm

Lunch (Cresta Sun Hotel)

02:00 pm – 05:00 pm

**Technical Session**

Session Chair: R. Galler

Erik Iglesias, VSH Hagerbach Test Gallery Ltd., Switzerland

TECHNICAL AND COMMERCIAL EVALUATION OF MODIFIED SHOTCRETE IN TUNNELS CONSTRUCTION

Atsumu Ishida, DENKA (Denki Kagaku Kogyo K.K.), Japan

APPLICATION OF BLENDED CEMENT IN SHOTCRETE TO REDUCE THE ENVIRONMENTAL BURDEN

Marc Jolin, Laval University, Canada

UNDERSTANDING THE PUMPABILITY OF CONCRETE

K. Yuno, Chikanori Hashimoto, M. Ishii, H. Mizuguchi; The University of Tokushima, Japan

CONSTRUCTION PLACEMENT, HARDENED PROPERTIES AND DURABILITY OF SHOTCRETE WITH HIGH FUNCTIONAL FLY ASH

**Tuesday June 09, 2009 (continued)**

**Poster presentations**

Gerhard Pittino, Mining University of Leoben, Austria  
X-RAY TOMOGRAPHIE OF STEEL FIBRE REINFORCED  
SHOTCRETE (SFRS)

Patrick Steiner, Solexperts AG, Switzerland  
TUNNELLING IN SQUEEZING AND SWELLING ROCK BY USING  
HIGH DEFORMABLE CONCRETE ELEMENTS

07:00 pm – 07:30 pm

Social Hour (Cresta Sun Hotel)

07:30 pm – 09:00 pm

Dinner (Cresta Sun Hotel)

**Wednesday, June 10, 2009**

07:00 am – 08:00 am

Breakfast (at your hotel)

08:00 am – 08:15 am

Come to Cresta Sun Hotel – buses will leave at 8:15 am

**Hagerbach Test Gallery, Flums, Switzerland**

08:15 am – 09:30 am

Bus transfer to Hagerbach Test Gallery

09:30 am – 10:00 am

Coffee Break

10:00 am – 12:00 pm

**Technical Session**

Session Chair: Felix Amberg, Switzerland

Introduction into the demonstrations

12:00 pm – 01:30 pm

Lunch

01:45 pm – 02:45 pm

Practical and hands-on demonstrations

03:45 pm – 04:15 pm

Coffee Break

04:15 pm – 05:30 pm

Practical and hands-on demonstrations

05:30 pm

Guided tour in the test gallery

07:00 pm

'The dinner underground'

10:00 pm

Bus transfer back to Davos

**Thursday, June 11, 2009**

09:00 am

Breakfast

Depart Davos or stay to enjoy recreational opportunities



### Special Note for Accompanying Persons for Wednesday, June 10, 2009

On Wednesday the technical sessions will be held in the Hagerbach Test Gallery, approximately one hour's drive from Davos. Accompanying persons can enjoy the day in the spa village of Bad Ragaz.

07:00 am – 08:00 am	Breakfast (in your hotel)
08:00 am – 08:15 am	Go to Cresta Sun Hotel; buses leave at 8:15 am
08:15 am – 09:30 am	Bus transfer to Hagerbach Test Gallery
09:30 am	Coffee Break in the Test Gallery
	Bus transfer for accompanying persons only to Bad Ragaz Spa Village

*Bad Ragaz, attractively situated in the Rhine valley at the mouth of the Tamina Gorge, is one of Switzerland's leading spas. The warm radioactive springs (37° C; 99° F), with a flow of 3,000 - 10,000liters a minute, are used in the treatment of rheumatism, paralysis, metabolic disorders and injuries of all kinds. The springs rise in the Tamina Gorge and the water has been piped down to Ragaz since 1840.*

10:00 am – 05:00 pm	Free time in Spa Village, Bad Ragaz (lunch on your own) There are several options to spend the day:
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- (1) Visiting Tamina Gorge and Old Bath Pfäfers:  
*A peaceful and relaxing walk of approximately 2 hours, a visit in the breath-taking Tamina Gorge to the hot water springs and the ancient baths.*

*Healing hot water jets, up to 37° C warm, surge from the ground, sometimes forming geysers up to 70 m high. The first guests were lowered in baskets, there was soon a spa. Now this Baroque spa "Alten Bad Pfäfers" offers a charming spa experience, as well as a wonderful restaurant. There is also a permanent exhibit which covers the then-leading surgeon, Paracelsus, the old spa, as well as life in the old spa. The hike to the ravine where the spa is easy enough. The hike thereafter, through the actual gorge, is highly impressive, with parts of the gorge so close that the walls seem to touch.*

*Bus transport available by public transport*

- (2) 4<sup>th</sup> Swiss triennial of sculpture – Bad Ragaz 2009  
*Europe's largest open-air exhibition of sculptures. Free visit of the exhibition in the beautiful landscapes of the parks*
- (3) The Wellness hit of Bad Ragaz! – Tamina therme  
*Relax, regain energy, do good to yourself.*

05:00 pm	Bus transfer from Bad Ragaz to Hagerbach
05:30 pm	Guided round trip in the gallery
07:00 pm	Conference banquet: The dinner underground
10:00 pm	Bus transfer back to Davos