

Program

Shotcrete for Underground Support XIII

September 3 - 6, 2017
Kloster Irsee, Irsee, Germany

Conference Chair:

Dietmar Mähner
FH Münster, Germany

Conference Co-Chairs:

Matthias Beisler
ILF Consulting Engineers, Thailand

Frank Heimbecher
FH Münster, Germany



Engineering Conferences International

32 Broadway, Suite 314 - New York, NY 10004, USA

www.engconfintl.org – info@engconfintl.org

ITA - FH Münster - CiF e. V.

**Kloster Irsee
Klosterring 4
D-87660 Irsee
Tel.: +49 (0)8341 906-00
hotel@kloster-irsee.de**

Engineering Conferences International (ECI) is a not-for-profit global engineering conferences program, originally established in 1962, that provides opportunities for the exploration of problems and issues of concern to engineers and scientists from many disciplines.

ECI BOARD MEMBERS

Barry C. Buckland, President
Mike Betenbaugh
Nick Clesceri
Peter Gray
Michael King
Raymond McCabe
David Robinson
Eugene Schaefer
P. Somasundaran

Chair of ECI Conferences Committee: Nick Clesceri

ECI Technical Liaison for this conference: Herbert Klapperich

ECI Executive Director: Barbara K. Hickernell

ECI Associate Director: Kevin M. Korpics

International Advisory Committee

Felix Amberg (Switzerland)
Dr. Stefan Bernard (Australia)
Prof. Dr.-Ing. Rolf Breitenbücher (Germany)
Harald Cordes, (USA)
Martin Doll (France)
Prof. Dr. Carsten Drebenstedt (Germany)
Wolf-Dieter Friebel (Germany)
Prof. Eivind Grøv (Norway)
Prof. Dr.-Ing. Frank Heimbecher (Germany)
Dipl.- Ing. Dr. techn. Max John (Austria)
Prof. Marc Jolin (Canada)
Dr. Li Gou Jun (Singapore)
Ingo Kaundinya (Germany)
Prof. Dr.-Ing. Herbert Klapperich (Germany)
Uwe Kneißl (Germany)
Prof. Dipl.-Ing. Dr. Wolfgang Kusterle (Austria)
Dr.-Ing. Roland Leucker (Germany)
Prof. Dr.-Ing. Martin Lühder (Germany)
Dr. Thomas Marcher (Austria)
Prof. Lu Ming (Norway)
Rusty Morgan (Canada)
Carsten Peter (Germany)
Dr. Rudolf Röck (Austria)
Andreas Schaab (Germany)
Prof. Marawan Shahien (Egypt)
Dr.-Ing. Oscar Sigl (Singapore)
Prof. Dr.-Ing. Ludger Speier (Germany)
Prof. Dr.-Ing. Markus Thewes (Germany)
Volker Wetzig (Switzerland)
Dr.-Ing. Ralf Winterberg (Malaysia)
Prof. Junsheng Yang (China)

The Conference Pioneer Committee

The following are Honorary Members of the Conference Pioneer committee:

Prof. Golser, Austria
John Sharp, UK
David Wood, Canada
Rusty Morgan, Canada
Herbert Klapperich, Germany
Rudi Pöttler, Austria
Jaque Willoq, France
Tarcisio Celestino, Brazil
Harvey Parker, USA
Koichi Ono, Japan
Felix Amberg, Switzerland
Knut Garshol, Norway
Ming Lu, Norway
Guojun Li, Singapore
Dietmar Mähner, Germany
Mathias Beisler, Thailand

Previous conferences in this series

Use of Shotcrete for Underground Structural Support

July 15-20, 1973

South Berwick, Maine

Conference Chair:

J. R. Graham, Bureau of Reclamation

Shotcrete For Underground Support II

October 3-8, 1977

Easton, Maryland

Conference Chair:

J. A. Veltrop, Harza Engineering Co.

Shotcrete For Underground Support III

April 16-21, 1978

St. Anton, Austria

Conference Chair:

L.F. Piatnik, Walco Chemical Corporation

Shotcrete For Underground Support IV

September 5-11, 1982

Paipa, Colombia

Conference Chairs:

Elwyn King, P.B, Q+D

Alberto Murlando, Ingetec

Shotcrete For Underground Support V

June 3-7, 1990

Uppsala, Sweden

Conference Chairs:

John Sharp, Geo-Engineering

Elwyn King, Parsons Brinckerhoff

Tomas Franzen, Swedish Rock Research Foundation

Shotcrete For Underground Support VI

May 2-6, 1993

Niagara-on-the-Lake, Ontario

Conference Chairs:

D.F. Wood, University of Toronto

D. Morgan, Hardy BBT

Shotcrete For Underground Support VII

June 11-15, 1995

Seefeld, Austria

Conference Chairs:

H. Klapperich, DMT

R. Poettler, Kling

J. Willocq, Lafarge International

Previous conferences in this series

Shotcrete For Underground Support VIII

April 11-15, 1999

Sao Paulo, Brazil

Conference Chairs:

Tarcisio B. Celestino, Thermag & University of Sao Paulo, Brazil
Harvey Parker, Harvey Parker and Associates

Shotcrete For Underground Support IX

November 17-21, 2002

Shonan Village, Japan

Conference Chairs:

Koichi Ono, University of Kyoto
Rusty Morgan, AGRA Earth & Environment

Shotcrete For Underground Support X

September 12-16, 2006

Whistler, B.C., Canada

Conference Chairs:

Rusty Morgan, AMEC Earth & Environmental
Harvey Parker, Harvey Parker & Associates, Inc.

Shotcrete For Underground Support XI

June 7-10, 2009

Davos-Platz, Switzerland

Conference Chairs:

Felix Amberg, Amberg Group, Swiss Tunnelling Society
Knut F. Garshol, BASF Construction Chemicals, LLF

Shotcrete For Underground Support XII

October 11-13, 2015

Singapore

Conference Chair:

Ming Lu, Nanyang Technological University

Sunday, September 3, 2017

16:30 - 18:00	Conference check-in
18:00	Dinner
19:30	Concert by organist Roland Götz on historic organ
21:00	Social period

NOTES

- *Technical sessions will be in Room 227.*
- *Dinners on Sunday and Monday will be in the cellar. The conference banquet on Tuesday will be in Room 12.*
- *Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless prior permission has been granted by the author and ECI.*
- *Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).*
- *Speakers – Please leave at least 3-5 minutes for questions and discussion.*
- *Please do not smoke at any conference functions.*
- *Turn your mobile telephones to vibrate or off during technical sessions.*
- *Please write your name on your program so that it can be returned to you if lost or misplaced.*
- *After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.*

Monday, September 4, 2017

- 07:30 - 09:00 Breakfast buffet
- 09:00 - 09:30 **Conference Opening / Welcome Talks**
Prof. Herbert Klapperich, ECI Liaison
Prof. Dietmar Mähner, Conference Chair
Prof. Tarcisio Celestino, President, ITA
Prof. Conrad Boley, DGGT - German Geotechnical Society, Head of the "Rock Mechanics" Division
Rusty Morgan, Canada. Past Chair, ECI-SUS X
Guojun Li, Singapore, Past Chair, ECI-SUS XII
Preedee Ngamsantikul, President of TUTG Thailand Underground & Tunneling Group
- 09:30 - 10:30 **Panel Discussion**
- "SHOTCRETE: Development - methods - design - application / soil-rock"**
– Tarcisio Celestino, President ITA
 opening statement
– Panel
 Mark Jolin, Conrad Boley, Bruno Mattle, Wolfgang Kusterle, Rusty Morgan, Götz Vollmann, Jinyang Fu, Martin Eberli, Michael Kompatscher
– Moderation
 Dietmar Mähner, Herbert Klapperich
- 10:30 - 11:00 Coffee Break
- 11:00 - 11:30 **Multi layered shotcrete design for tunnel construction**
Matthias Werner Beisler, ILF Consulting Engineers, Austria
- 11:30 - 12:00 **In situ testing of early age energy absorption in sprayed fiber reinforced concrete - HyEA – test**
Michael Kompatscher, Hagerbach Test Gallery Ltd, Switzerland
- 12:00 - 12:30 **Limitation of strength of sprayed concrete**
Sven Plückelmann, Ruhr University Bochum, Germany
- 12:30 - 14:30 Lunch
- 14:30 - 15:00 **Possible applications of a highly ductile sprayed concrete as a measure for ground support and structural upgrade**
Götz Vollmann, Ruhr-University Bochum, Germany
- 15:00 - 15:30 **Toward a better understanding of the placement of shotcrete: Nozzles and velocities**
Pierre Siccardi, Marc Jolin, Laval University, Canada

Monday, September 4, 2017 (continued)

- 15:30 - 15:45 **Cellular sprayed concrete for simple and economic remixing**
Kyong-Ku Yun, Kangwon National University, Korea
- 15:45 - 16:15 Coffee Break
- 16:15 - 16:30 **Underground support for Xe-Pian Xe-Namnoy hydropower project, Lao**
PDR - 128
Chawalit Tanomtin, Right Tunnelling Co., Ltd., Thailand
- 16:30 - 16:45 **Application examples of a very economic way of cellular sprayed concrete**
on retaining wall and artificial rock
Kyong-Ku Yun, Kangwon National University, Korea
- 16:45 - 17:00 **Impact of polymer binders on the pull-out force of macro-synthetic fibers**
in spayed concrete
Klaus Bonin, Wacker Chemie, Germany
- 19:30 Dinner followed by social period

Tuesday, September 5, 2017

- 07:30 -09:00 Breakfast buffet
- 09:00 - 09:30 **New Development of an annular gap mortar for mechanized tunnelling**
Matthias Hausmann, FH Münster, IuB, Germany
- 09:30 - 10:00 **Structural retrofitting of rescue tunnels in single shell shotcrete construction – requirements and experiences**
Daniel Eickmeier, Federal Highway Research Institute (BASt), Germany
- 10:00 - 10:15 **Production of a waterproofing construction in steel fiber concrete at the railway project Stuttgart 21**
Andreas Schaab, HOCHTIEF Infrastructure GmbH, Germany
- 10:15 - 10:30 **Concrete renovation and enhancing of fire protection of an existing tunnel with spayable polymer cement concrete (SPCC)**
Stefan Peters, IMM, Germany
- 10:30 - 11:00 Coffee Break
- 11:00 - 11:30 **The effects of local voids and imperfections of surrounding rock on the performance of existing tunnel lining**
Jinyang Fu, Central South University, China
- 11:30 - 12:00 **Properties and function of permanent shotcrete linings waterproofed with bonded membranes**
Karl Gunnar Holter, Norwegian University of Science and Technology (NTNU) Trondheim, Norway
- 12:00 - 12:30 **Value engineering in engineering tunnels projects**
Mahmoud Elshourbagy, Taibah University Al-Madina, Saudi Arabia
- 12:30 - 14:00 Lunch Break
- 14:00 - 14:30 **Durable and sustainable shotcrete**
Maria Thumann, OTH Regensburg, Germany
- 14:30 - 15:00 **Determination of trigger levels for SCL and NATM**
Max John, John Tunnel Consult, Austria
- 15:00 - 15:15 **Rock-Support analysis for buckling failure at Cuiabá Mine decline**
Felipe Pereira, AngloGoldAshanti, Brazil
- 15:15 - 15:30 **Application of cellular sprayed concrete into two-lift concrete**
Kyong-Ku Yun, Kangwon National University, Korea
- 15:30 - 16:00 Coffee Break

Wednesday, September 6, 2017

- | | |
|---------------|---|
| 07:30 – 09:00 | Breakfast buffet |
| 09:00 - 09:30 | Specifying and testing fiber reinforced shotcrete: Advances and challenges
Antoine Gagnon, Laval University, Canada |
| 09:30 - 10:00 | Precipitations in the Tunnel Drainage System - Optimized Shotcrete Mix-Design
Maria Thumann, OTH Regensburg, Germany |
| 10:00 - 10:30 | Innovative shotcrete technologies for durable rapid underground development and infrastructure repairs exposed to severe conditions
Nicolas Ginouse, King Shotcrete Solutions, Canada |
| 10:30 - 11:00 | Final discussion |
| 11:30 | Lunch and departures |