

Final Program • 7th Nordic Grouting Symposium • November 13, 2013

VENUE: Quality Hotel 11, Maskingatan 11, Gothenburg
08.00-09.00 Registration

09.00 Welcome to Gothenburg and the Nordic Symposiums

Opening of 7 th Nordic Grouting Symposium

CASE STUDIES IN THE NORDIC COUNTRIES PART I

Rock mass grouting in Sweden and Norway

A matter of cultural differences or factual causes?

Eivind Grønv, SINTEF/NTNU Trondheim Norway

Johan Funehag, Chalmers University of Technology, Sweden

Thomas Janson, Tyréns, Sweden

Grouting of shaft intersecting deep underground hydro-geological zones HZ20A & HZ20B in ONKALO underground research facility, Olkiluoto

Lassi Hatakka, Janika Tirinen, Noora Salminen, Guido Nuijten, Rockplan, Finland

Riitta Lehmusjärvi, Susanna Aro, Posiva, Finland

Grouting operations in complex and heavily water bearing ground – an analysis and summary from the Hallandsås Project

Robert Sturk, Skanska Sverige, Sweden, Johan Striberger, Skanska-Vinci, Sweden,

Björn Stille, Sweco Infrastructure, Sweden, Oskar Aurell Skanska-Vinci, Sweden

SCIENCE AND RESEARCH ON MATERIALS, PROGNOSIS AND EQUIPMENT

Experiences from low-pH grouting at 400 m depth in the Äspö HRL expansion project

Henrik Ittner, Svensk Kärnbränslehantering, Sweden

Isabelle Olofsson, Svensk Kärnbränslehantering, Sweden

Approach for early engineering geological prognosis adapted for rock grouting design

Sara Kvartsberg, Åsa Fransson, Chalmers, Sweden

In-line ultrasound based rheology – A new tool for the measurement of flow and rheological properties of cement based grout

Mashuqur Rahman, KTH, Sweden

Ulf Håkansson, KTH/Skanska, Sweden

CONCEPTS FOR GROUTING

Grouting strategy based on hydrogeological conditions

Peter Wilén and Magnus Zetterlund, Norconsult, Sweden

Numerical and field assessments of the effect of grouting on a drinking water reservoir and on the surrounding water table

Erik Endre and Thomas Pabst, Norwegian Geotechnical Institute, Oslo, Norway

Groutability of the rock mass using fracture statistics

Edward Runslätt, Mikael Creütz and Lars Hässler, Golders Associates, Sweden

CASE STUDIES IN THE NORDIC COUNTRIES PART II

Colloidal silica-grouting tests in underground research facility Onkalo , Eurajoki, Finland

Kalle Hollmén, Saanio & Riekkola, Finland

Sanna Mustonen, Posiva, Finland

Tapani Lyytinen, ElyManagement, Finland

Experiences from the grouting methods used in the Matinkylä contract during the construction of the West metro between Helsinki and Espoo

J.P. Pöllä, I.Konstantas, Sito, Finland

Evaluation of pre-grouting with the RTGC method and results from the City Line project

Mats Holmberg, Tunnel Engineering, Sweden

Masakuni Tsuji, Shimizu Corporation, Japan

Jalaleddin Yaghoobi Rafi, KTH Royal Institute of Technology, Sweden

Björn Stille, Sweco Infrastructure, Sweden

Håkan Stille, KTH Royal Institute of Technology, Sweden

Closure of Nordic Grouting Symposium

POSTER PRESENTATIONS:

Silica grouting in deep underground saline conditions in ONKALO underground research facility, Olkiluoto

Lassi Hatakka, Noora Salminen, Guido Nuijten, Rockplan Ltd, Finland

Riitta Lehmusjärvi, Sanna Mustonen, Posiva Oy, Finland

Experiences of pre-excavation grouting in TBM tunnelling

Orjan A Sjostrom, MSc, Civil Engineering, Sweden

Improvement of penetrability of cement based grouts by changing the cement size curve

Almir Draganović, KTH, Royal Institute of Technology, Sweden

Conny Björk, Nauplion, Sweden

Forbidden particle love

Pernilla Petersén, Sika, Sweden

Gelling of silica sol in high pressure

Masakuni Tsuji, Shimizu Corporation, Japan

Johan Funehag, Chalmers/Tyréns

Grouting strategy using Observational Method at Äspö Hard Rock Laboratory, Sweden

Isabelle Olofsson, Svensk Kärnbränslehantering, Sweden

Mats Holmberg, Tunnel Engineering, Sweden

Emmeli Johansson, Svensk Kärnbränslehantering, Sweden

**15.45 PROFESSIONAL DISCUSSION - PART I
GROUTING AND ROCK MECHANICS
(DELEGATES FROM DAY 1+2 ARE WELCOME)**

The Professional Discussion commences after the final sessions of the Grouting Symposium and the concluding discussion will be held the next day, just before the Rock Mechanics Symposium. All participants of both symposiums are welcome to attend. The Professional Discussion will comprise a short opening lecture, working in groups and a concluding panel discussion.

Moderator: Dr. Lars Hässler/Golder Associates

Introductory presentation:

Fracture aperture measurement and consequences for grouting

J. Thörn, Chalmers University of Technology, Sweden

Å. Fransson, Chalmers University of Technology, Sweden

Professionals from both the field of grouting and rock mechanics are gathered at the two symposiums. We would therefore like to take the opportunity to initiate a discussion and elaborate on topics in the interphase of our fields of knowledge. It is not so developed, and needs to be addressed to increase knowledge and understanding.

The drill and blast tunneling method will induce fractures in the adjacent rock material and thus may increase the local permeability and ingress of water. Rock grouting will affect the rock mechanical parameters around an excavated opening during construction as well as after.

Do we need to take such considerations into account in our design? These, as well as other questions and thoughts will be addressed at the Professional Discussion.

19.30 Festive Dinner at Gothenburg City Hall

Final Program • 2nd Nordic Rock Mechanics Symposium • November 14, 2013

VENUE: **Quality Hotel 11, Maskingatan 11, Gothenburg**

08.00-09.45 Registration

09.00 Professional Disucssion – Part II, closure (*from November 13th).

Delegates from day 1 + 2 are welcome.

09.45 Opening of 2nd Rock Mechanics Symposium

USE OF UNDERGROUND SPACE IN THE NORDIC COUNTRIES

Going underground in Sweden, past-present-future

Per Tengborg, BeFo, Sweden

Ulf Lindblom, Gecon, Sweden

Rock Engineering in Norway

Roger Olsson, NGI, Norway

Use of underground space in Finland

Ilkka Vähäaho, Helsinki City Real Estate Department, Finland

ROCK SUPPORT DEGRADATION AND MAINTENANCE

Maintenance of important traffic links – special requirements on tunnel refurbishment measures

Robert Strukely, Amberg Engineering, Switzerland

Flavio Modetta, Amberg Engineering, Switzerland

Inspection and maintenance of 130 km sewage tunnels in Gothenburg

Hans Aspfors, Bergab, Sweden, Thomas Wallroth, Bergab, Sweden

Life time optimization of hard rock tunnel maintenance

Ulf Lindblom, Gecon, Sweden

Lars-Olof Dahlström, NCC Construction/Chalmers University of Technology, Sweden

ROCK TUNNEL STABILITY

Numerical study of the stability of a large hydropower machine hall in the Himalayas under dynamic loading

Rajinder Kumar Bhasin, Thomas Pabst and Roger Olsson,

Norwegian Geotechnical Institute, Oslo, Norway

Numerical approaches for estimating the effect of scale on rock mass strength

Derek Martin, Yun Lu & Hengxing Lan, Dept. of Civil and

Environmental Engineering, University of Alberta, Edmonton, Canada

Rolf Christiansson, SKB, Stockholm, Sweden

Thermal spalling and fracturing around cylindrical opening in rock under bi-axial loading condition — Observations and analysis

Pouria Taleghani, Ping Zhang, Erling Nordlund, Luleå University of Technology

Spatial distribution of elastic properties around vertical shaft in ONKALO URCF and horizontal TBM and D&B tunnels in ÄSPÖ HRL

Topias Siren, Posiva Oy, Finland

CASE RECORDS

Rock burst phenomena and micro tremors – experience gained from the Gotthard Base Tunnel

Michael Rehbock-Sander, Amberg Engineering, Switzerland

TBM excavation in fault zones and squeezing ground, based on the case study of Gotthard Base Tunnel

T. Jesel, Amberg Engineering Ltd. Regensdorf, Switzerland

G. Wieland, Amberg Engineering Ltd. Regensdorf, Switzerland

Rock engineering challenges and excavation methods at the City Line, Station City, Stockholm

R.M. Swindell, NCC Teknik, Sweden

G. Manell, NCC Construction, , Sweden

M. Christiannsson, NCC Teknik, Sweden

16.00 Closure of Nordic Rock Mechanics Symposium

POSTER PRESENTATIONS:

Rock mechanics study for the Hitura mine

E. Johansson, A. Lehtonen, H. Lampinen, T. Hänninen, Saanio & Riekkola Oy, Finland

V-M. Seppä, J. Nieminen, Belvedere Mining Oy, Finland

POSE in situ Pillar stability experiment

Erik Johansson, Saanio & Riekkola Oy, Finland, Topias Siren, Posiva Oy, Finland

Matti Hakala, KMS-Hakala Oy, Finland

A first step towards a quantitative and cost efficient indirect determination of geotechnical parameters in sedimentary rocks

Sara Johansson, Henrik Möller, Olof Friberg, Tyréns, Sweden

Geological-hydrogeological modeling in support of tunnel design and construction

Mansueto Morosini, Peter Hultgren,

Swedish Nuclear Fuel and Waste Management Co, Sweden

Numerical simulation of the response of an underground opening at different locations under fault-slip induced seismic wave

Faez Sayahi, Ping Zhang, Erling Nordlund, Luleå University of Technology, Sweden

2D/3D numerical study of the stability of a tunnel with thin rock overburden and sidewall thickness

Arnstein Aarset, Thomas Pabst and Jørgen Fjæran,

Norwegian Geotechnical Institute, Oslo, Norway

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- **GMA Ground Machinery Applications**
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