



2nd NORDIC ROCK MECHANICS SYMPOSIUM

Gothenburg, Sweden 2013 Proceedings

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2ND NORDIC ROCK MECHANICS SYMPOSIUM, GOTHENBURG, 2013

PREFACE

Utilizing the "third dimension" i.e. underground space for infrastructural facilities like traffic tunnels, miscellaneous municipal facilities, energy plants and different types of storage has been a natural choice in the development of the Nordic countries for a long time. For an even longer period of time, the mines have brought welfare and work opportunities to our society. Understanding of rock mechanics is vital and plays an important part in this development.

Rock mechanics is an acknowledged science and well proven from projects and mines. However, challenges to increase efficiency and safety in our operations calls for a continued open discussion and exchange of ideas within our field of expertise. That is why we gather once more after the first meeting "Rock mechanics in the Nordic countries" year 2010 in Kongsberg, Norway.

This second rock mechanical symposium consists of oral and poster presentations together with a Professional Discussion within the areas of research, current state of practice and case histories.

The work of carrying this year's symposium was managed by the Rock Engineering Research Foundation - BeFo in Sweden together with the Organising & Scientific Committee and Advisory Committee consisting of dedicated people from companies and academia to make this symposium a memorable event.

We wish that the symposium will lead to fruitful discussions and up-coming ideas. The contributors being authors of articles published within this proceeding are highly acknowledged. Without high-level articles the symposium would not have taken place. A special welcome is directed to the students that have found that the symposium can give them guidance in their work opportunities to come.

Welcome!	
Ulf Lindblom	Per Tengborg
Member Scientific Committee	Symposium Chairman/Research Director BeFo

Scientific and Organising Committee

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USE OF UNDERGROUND SPACE IN THE NORDIC COUNTRIES Going underground in Sweden, past-present-future Rock Engineering in Norway Use of underground space in Finland ROCK SUPPORT DEGRADATION AND MAINTENANCE Maintenance of important traffic links – special requirements for tunnel refurbishment measures Inspection and maintenance of 130 km of sewage tunnels in Gothenburg Life time optimization of hard rock tunnel maintenance ROCK TUNNEL STABILITY Numerical study of the stability of a large hydropower machine hall in the Himalayas under dynamic loading Numerical approaches for estimating the effect of scale on rock mass strength Thermal spalling and fracturing around cylindrical opening in rock under biaxial loading condition – Observations and analysis Spatial distribution of elastic properties around vertical shaft in ONKALO URCF

and horizontal TBM and D&B tunnels in ÄSPÖ HRL

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