FACTS SHEET to the research project ROCKBURST

SHORT TITLE / ACRONYM

ROCKBURST

LONG TITLE

Rock burst predictions for underground excavations

DESCRIPTION

The failure type rock burst is an extremely dangerous hazard, as it can occur very suddenly and is capable of releasing high amounts of energy. Therefore it is a danger to the lives of the people working as wells as to the used equipment. To reduce those risks and be able to install countermeasures, it is necessary to develop a method to predict rock burst. For this a deeper understanding of the hazard is necessary.

By combining various highly sophisticated testing methods, ranging from µCT-Scans to Acoustic Emission Tests, and comparing them with the rock parameters, the Graz University of Technology is defining certain parameters that can indicate if a rock is prone to rock burst.

Another focus of the research is to transfer the knowledge established in the laboratory to the actual construction site developing in-situ testing routines subsequently test them in the field.

The research goal is to understand if there is an increased potential for the investigated rocks to have high amounts of stored energy that subsequently could be released suddenly in a rock burst event. The generated knowledge can help to reduce the risk of rock burst and prevent accidents from happening.

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RELATED SCIENTIFIC CONTRIBUTIONS

YEAR	AUTHOR	WORKING TITLE
2019	Biermann	Evaluation of Acoustic Emission Testing to investigate rock burst *still in progress*
2018	Wenig	Development of a post processing and analysis routine for the AE-testing method for rock burst prone rocks
2018	Theußl	Rock Types with a Tendency to the Failure Mechanism Rockburst and their Similarities
2017	Peintner	Investigations on artificial samples with different aggregates regarding rockburst proneness
2015	Plahs	Acoustic emission measurement of fracture events in rocks *in German only*

RELATED PUBLICATIONS

YEAR	AUTHOR(S)	PUBLICATION TITLE
2019	Gottsbacher, Klammer, Schubert, Marschallinger, Hofmann, Zobl, Ketcham, Edey	Combination of various laboratory tests to investigate rock burst
2017	Klammer, Peintner, Lagger, Blümel, Schubert	Investigations on artificial samples with different aggregates regarding rockburst proneness

RELATED CONFERENCE PRESENTATIONS

YEAR	PRESENTER	CONFERENCE AND PRESENTATION TITLE
2019	Gottsbacher	Young Researcher's Day at the Geomechanics Colloquium 2019, Salzburg: Investigation of rockburst by combining testing methods
2019	Gottsbacher	ISRM 2019, Foz do Iguassu: Combination of various laboratory tests to investigate rock burst
2019	Ketcham	EGU 2019, Vienna: Catching failure in the act: mapping fracture initiation and spreading using X-ray tomography
2019	Marschallinger	EGU 2019, Vienna: A method and work flow for quantifying Rock Burst in 4D
2017	Klammer	AfriRock 2017, Cape Town: Investigations on artificial samples with different aggregates regarding rockburst proneness
2017	Marschallinger	IAMG 2017, Perth: Devastating micro cracks: cross-disciplinary research on spontaneous rock failure combining rock mechanical testing, µCT, OBIA and geostatistics

RELATED THIRD-PARTY FUNDED PROJECTS

YEAR(S)	PROJECT DESCRIPTION	INFORMATION TO FUNDER(S), FUNDING PROGRAM(S) AND CO-OPERATION PARTNER(S)
2016–2019	Rockburst: Researching spontaneous rock failure with rock mechanical testing, µCT, OBIA and geostatistics.	• Funder: FFG - The Austrian Research Promotion Agency • Funding programme: BRIDGE • Co-operation partner: University of Salzburg, Veitsch-Radex GmbH & Co OG, University of Texas at Austin